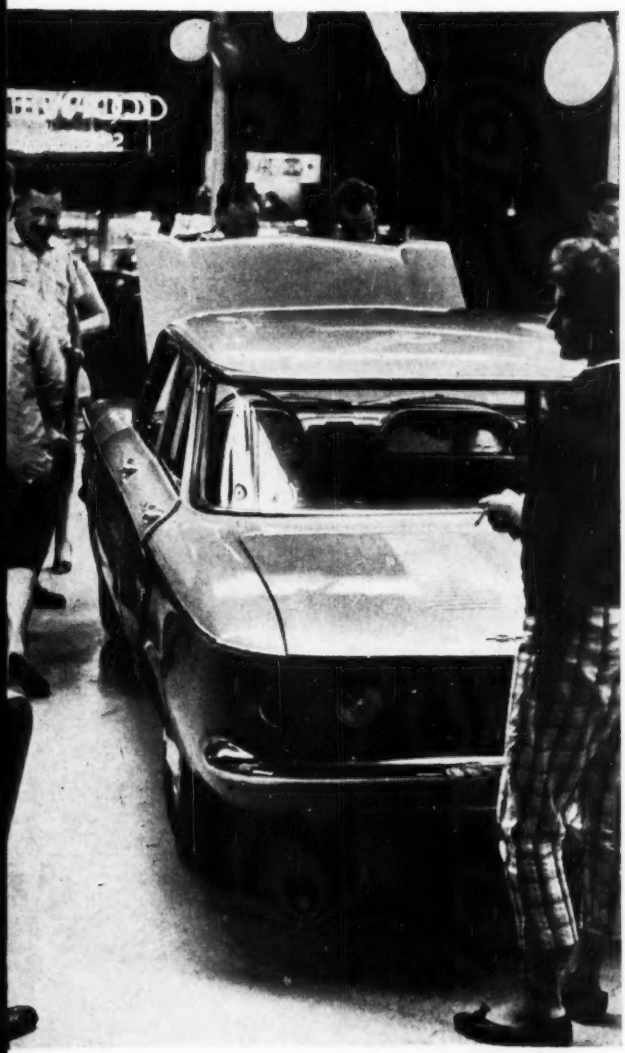
A McGRAW-HILL PUBLICATION

Chemical Week



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CW REPORT: Cost accounting is every management man's business . . . . . p. 83

October 17, 1959

STEVENS RICE
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NEW RODNEY HUNT

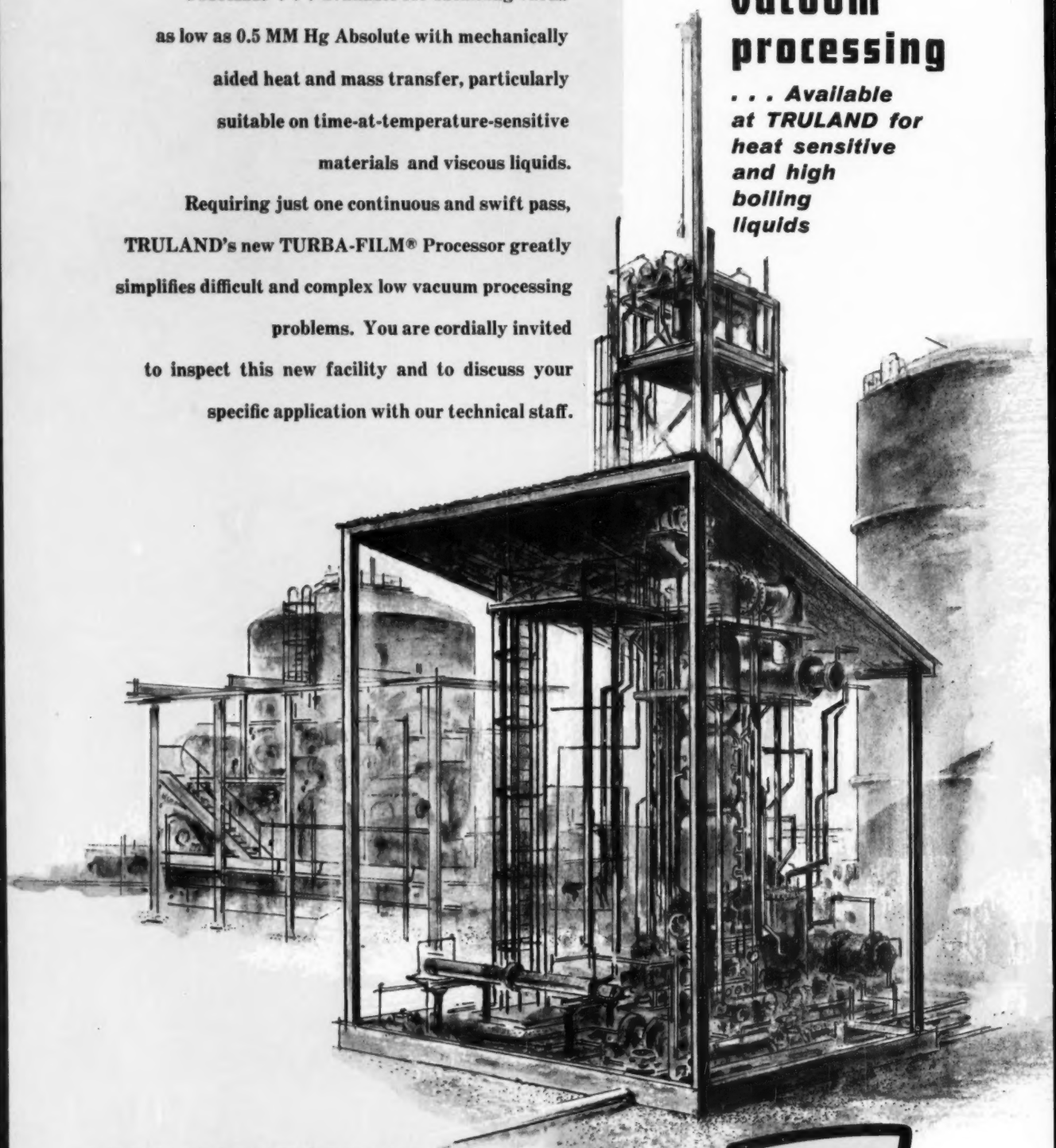
Stainless Steel TURBA-FILM® Processor for

vacuum processing

. . . Available at TRULAND for heat sensitive and high boiling liquids

TRULAND has recently installed a new Rodney Hunt Stainless Steel TURBA-FILM® Processor . . . available for obtaining vacua as low as 0.5 MM Hg Absolute with mechanically aided heat and mass transfer, particularly suitable on time-at-temperature-sensitive materials and viscous liquids.

Requiring just one continuous and swift pass, TRULAND's new TURBA-FILM® Processor greatly simplifies difficult and complex low vacuum processing problems. You are cordially invited to inspect this new facility and to discuss your specific application with our technical staff.



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Division of TRUBEK LABORATORIES,
East Rutherford, New Jersey

TRULAND

North American's new MARK-20 20,000 gallons in one load!

Here is the car railroads have been waiting for to compete better with other forms of transportation. The MARK-20 offers shippers economies in leasing rates, demurrage costs, and handling charges. The MARK-20 offers the railroads lower operating costs and in turn advantage can be taken of incentive rates with higher minimums.

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8,000 gallon tank car—approx. 90,000 lbs.

Highway truck maximum—approx. 45,000 lbs.

North American Car will custom build the MARK-20 to shipper's specifications. The car can be insulated, coiled, or compartmentalized. It is domeless for greater strength and can withstand pressure of 100 lbs. per square inch compared with 60 lbs. of most other tank cars.

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- Electrically welded—no rivets
- Six-inch bottom unloading
- Top unloading device
- 100-ton easy riding trucks
- Outside operated valve
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- High capacity 36″ draft gears
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Shippers! Here is the way to reduce your distribution costs and restore traffic to the rails

NOW... Hammond TUBESEALS*

Guaranteed for storage of HIGH AROMATICS

HERE'S GOOD NEWS FOR PRODUCERS AND HANDLERS OF HIGH AROMATIC CHEMICALS

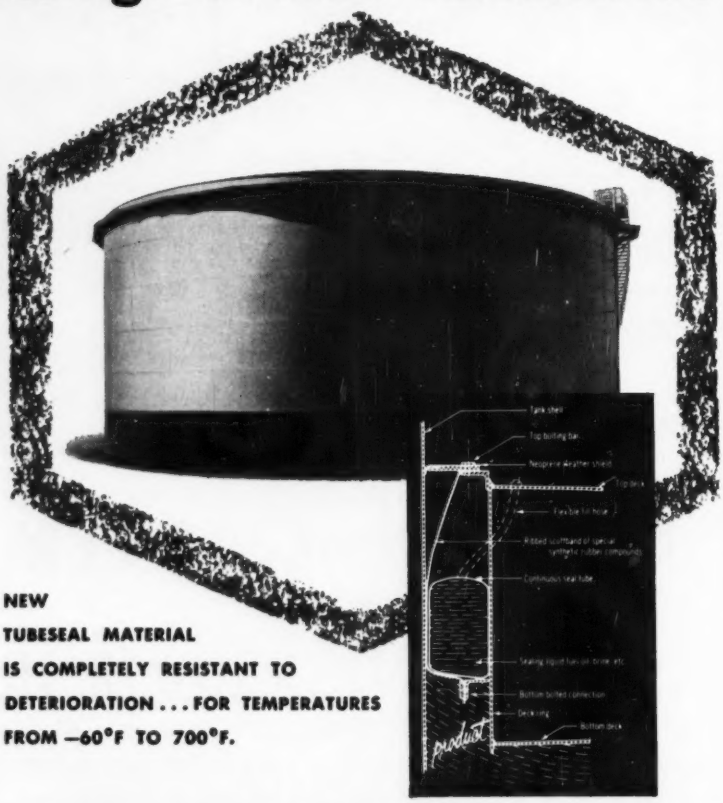
Elimination of evaporation losses and protection against product contamination of high aromatics in storage is now possible with the new Hammond Tubeseal System* for floating roof tanks. The new tubeseal material overcomes deterioration problems experienced with other sealing materials. Hammond Tubeseals are guaranteed for storing products containing 75% aromatics and for a wide range of other difficult liquids.

A Hammond Floating Roof Tank, with the new aromatic-resistant Tubeseal System, is the answer to liquid storage of high aromatics . . . and the Tubeseal Floating Roof can be installed on new or used tanks of riveted or welded construction.

ELIMINATE LIGHTNING FIRES:

The Hammond weathershield, a standard part of the Hammond Tubeseal System, is completely electro-conductive to eliminate the possibility of lightning fires.

Send us the details on your storage facilities and requirements. We will be glad to offer you the benefits of more than 50 years of liquid storage experience.



NEW TUBESEAL MATERIAL IS COMPLETELY RESISTANT TO DETERIORATION . . . FOR TEMPERATURES FROM —60°F TO 700°F.

INCLUDED AMONG THE AROMATICS AND OTHER CHEMICALS WHICH CAN NOW BE STORED IN HAMMOND TUBESEAL FLOATING ROOF TANKS ARE:

- ISOPROPYL ETHER
- ALLYL ALCOHOL
- ALLYL CHLORIDE
- HEXALENE GLYCOL
- ETHYL ALCOHOL
- ISOPROPYL ALCOHOL
- ETHYL GLYCOL
- BENZENE
- CREOSOTE OIL (CREOSOL)
- TOLUENE
- NAPHTHA and HYDROGEN SULFIDE
- TURPENTINE
- XYLENE
- BUTYL ALCOHOL
- SULPHURIC ACID 95%
- METHYLENE CHLORIDE
- TRICHLOROETHYLENE
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- BENZYL ALCOHOL
- AMYL ALCOHOL
- PROPANEDIOL

*Patented

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Chemical Week

TOP OF THE WEEK

OCTOBER 17, 1959

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- **Closer tabs on widely scattered plants is Reichhold's aim.** Key: new communications system .....**p. 65**
- **Navy may double its basic research outlay** if proposal to Naval Research Advisory Committee is carried out .....**p. 77**
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34 Two go public for expansion money: Foster Grant; Arizona Fertilizer and Chemical.

35 The Justice Dept. is "virtually forced" to appeal decision on GM-Du Pont case; it has a chance of upsetting La Buy's ruling.

35 Drug pricing on trial: corporate and FTC lawyers in antibiotics case question company presidents.

35 Du Pont's Memphis acrylonitrile plant to get acetylene from UCC—calcium carbide will be rail-shipped from Sheffield, Ala.

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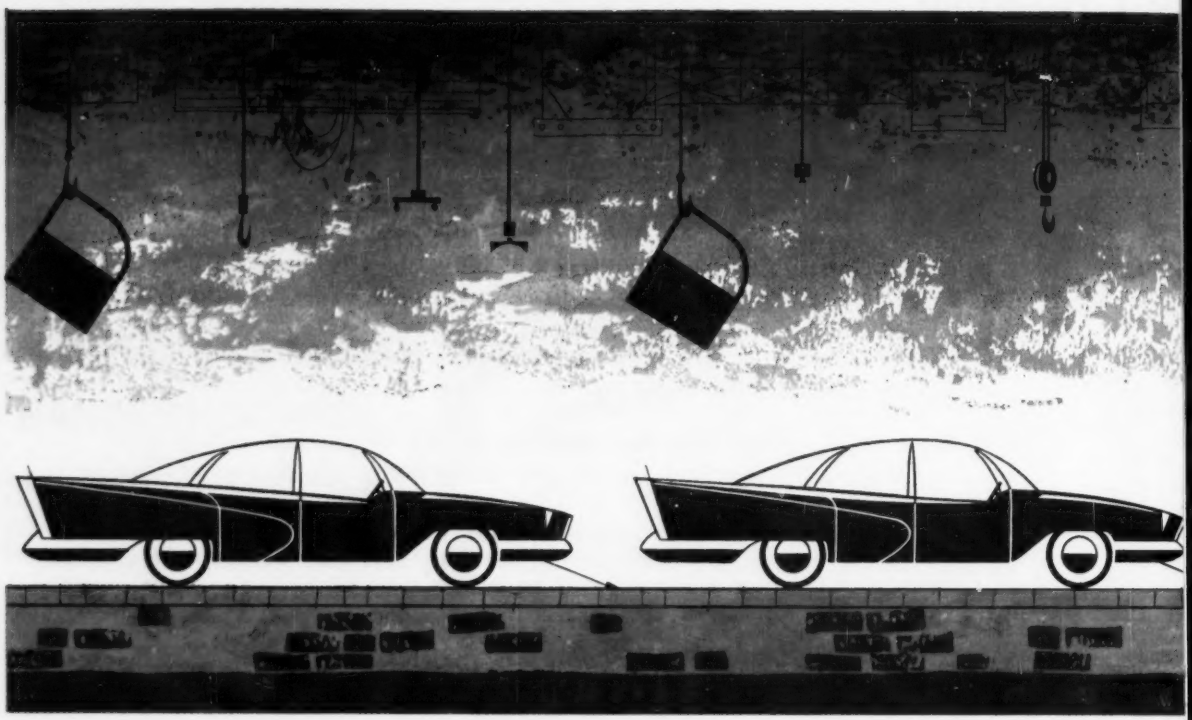


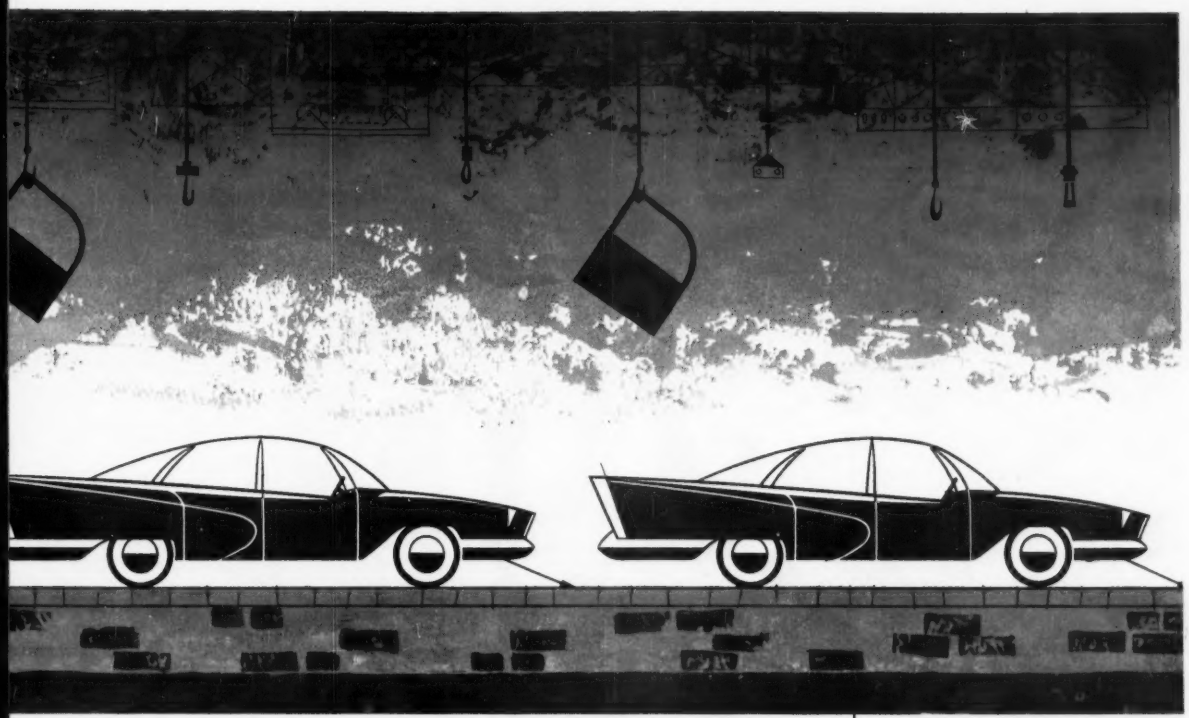
In acrylic lacquer systems . . .

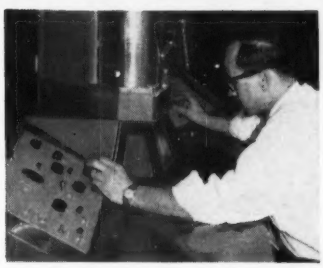
Ketone solvents give outstanding performance

Ketone solvents have long been preferred in the formulation of nitrocellulose, vinyl, epoxy, and other types of modern finishes. And now . . . with the arrival of acrylic finishes . . . ketones have again proved star performers. You can add acrylic lacquers to your line of coatings without adding solvents to your inventory.

Acetone, MEK, MIBK, EAK, and DAA provide the acrylic formulator with a wide range of strong solvents which can be blended to give any desired volatility pattern. Ketone solvents can be selected to give excellent control over such important lacquer properties as gloss, overspray "melt-in," solvent release, and weatherability.

Ketones are economical, too. Because of their exceptionally high solvent power, a little goes a long way! When you standardize on ketones, you save on inventory and storage space, too . . . because you need fewer solvents to do the same job!





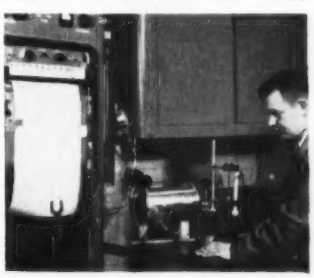
Lacquer film integrity is being studied with an electron microscope at the Shell Chemical Technical Service Laboratory at Union, New Jersey.

To better understand solvent release, hardness of lacquer film is being determined with Tukon Micro Hardness Tester at Shell's Technical Service Laboratory.

...plus economy

Through extensive research on acrylic lacquers, Shell Chemical has achieved a clearer understanding of the effects of specific solvents on film properties. This knowledge, backed by years of experience in surface coating technology, can help you achieve maximum performance and economy with ketones in acrylic formulations.

For further information, or help with specific lacquer formulation problems, contact your nearest Shell Chemical district office.



Gas-liquid chromatography apparatus for solvent analysis.

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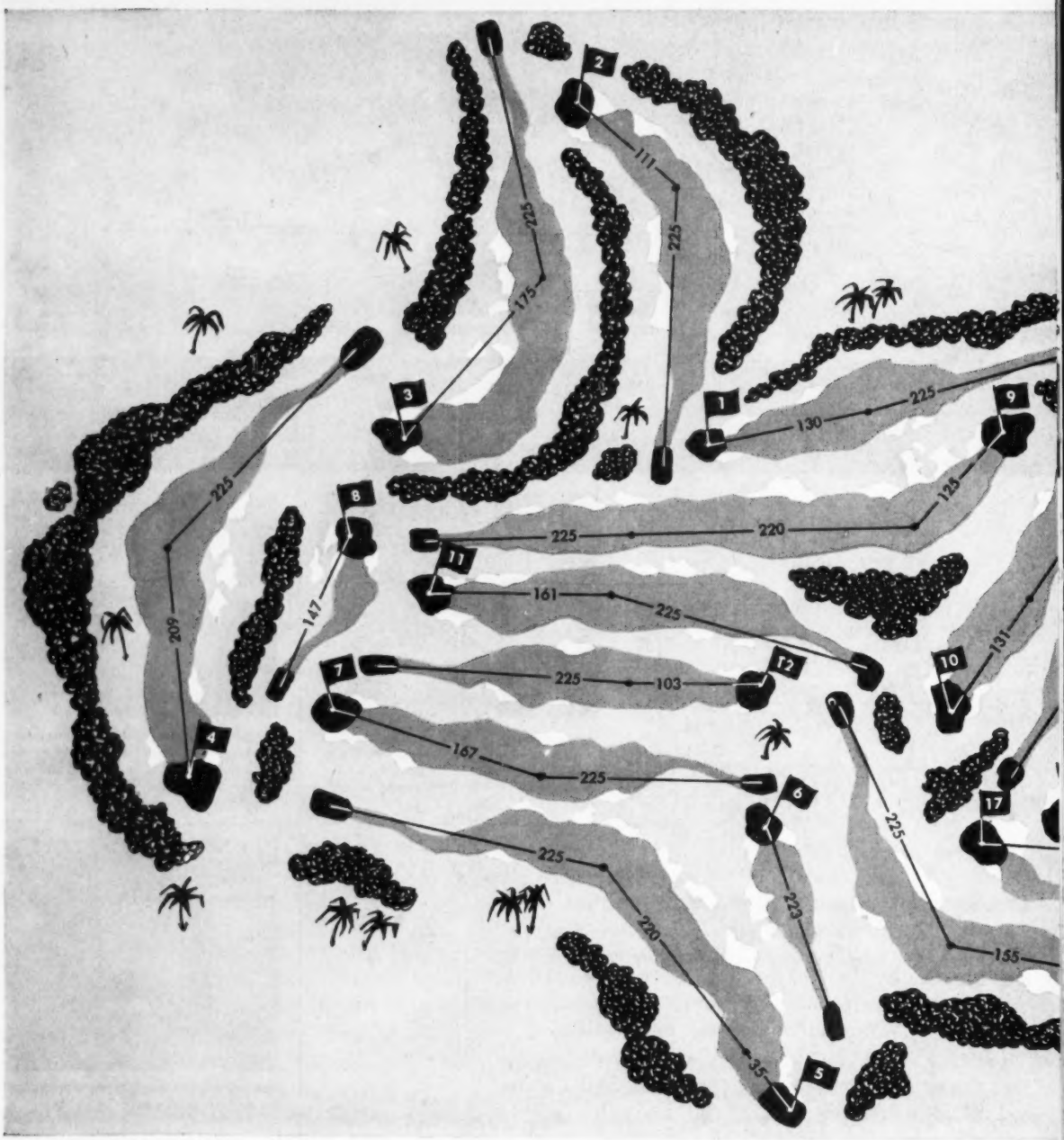
SHELL

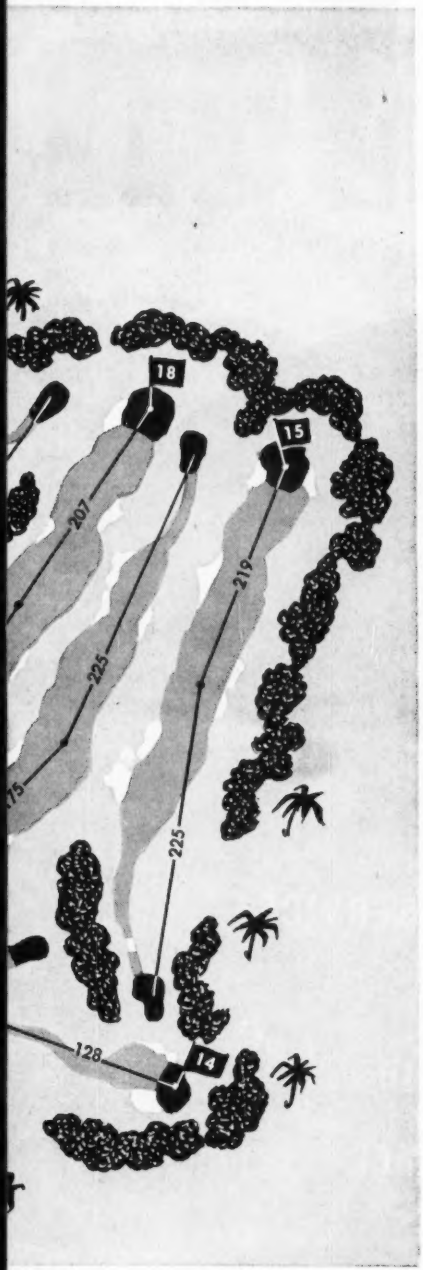
What do Boca Raton Golf Course and



EVEN CHAMPIONS can learn something when they play the Boca Raton golf course . . . it's noted as one of the nation's finest courses, laid out to be exacting, yet fair. Whether you play Boca Raton or your local club there's always one compensation—it's only eighteen holes back to the club house, and a chance to replay the game verbally.

HERCULES FATTY AMINES ALWAYS C18

Hercules Fatty Amines have in common?



Answer: 18

There are lots of things we'd like to tell you about our new fatty amines which we market under the trade names Delamin and Delamate. One thing we think might be particularly interesting is that these products are a single species of amine—exclusively eighteen-carbon, straight chain material. This may open to you the way to developing optimum performance expected from a fatty amine as compared to the technical uncertainties when several species are present. Add the care and quality control that go into the manufacture of these new materials with the result that here is another fine product of high uniformity you can always expect from Hercules.

Both Delamin and Delamate products are finding numerous uses due to their strong cationic properties and ability to attach themselves to negatively charged surfaces. In addition, Delamin amine can be converted into many other salts and derivatives which should be of primary interest for synthesis of compounds in such fields as pharmaceuticals, insecticides, disinfectants, and preservatives.

We've prepared a new 10-page booklet providing detailed information on the properties, reactions, and uses of these products. We'd like to send you a copy. If you have a specific problem, we'll be glad to assist in its solution. Just write:

Pine Chemicals Division, Naval Stores Department

HERCULES POWDER COMPANY

INCORPORATED

900 Market Street, Wilmington 99, Delaware

NA59-1

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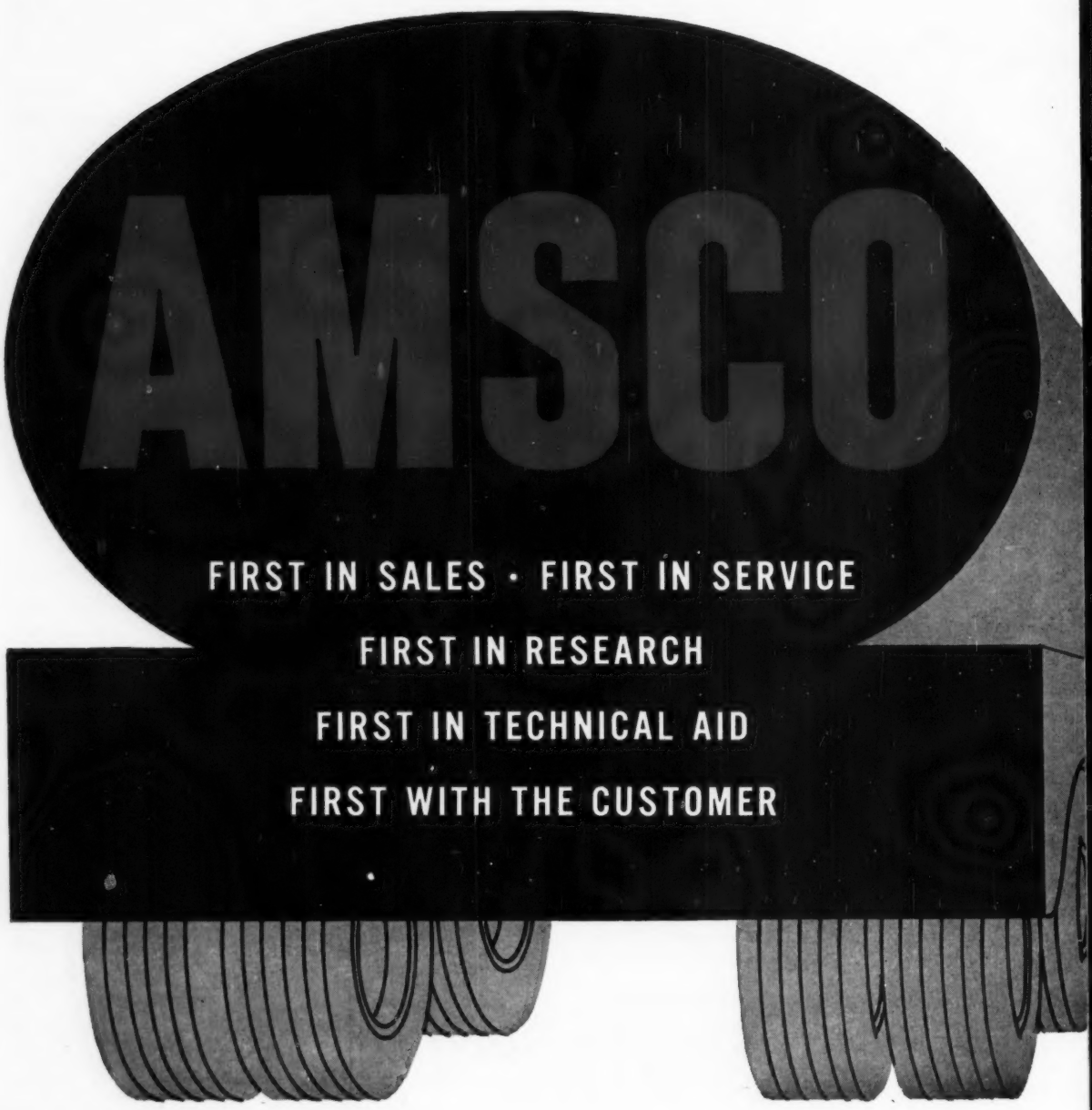
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Chances are one or more of the petroleum solvents you're using today was pioneered in the AMSCO research laboratories. In the past 36 years, AMSCO has developed many new solvents for general industrial use, and to suit the specific needs of a single industry or manufacturer.

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The man from AMSCO is a specialist in solvents applications. He has the training, experience, and the know-how to give you a hand with tough solvent problems. Feel free at any time to call in one of our solvent specialists. There is no obligation.

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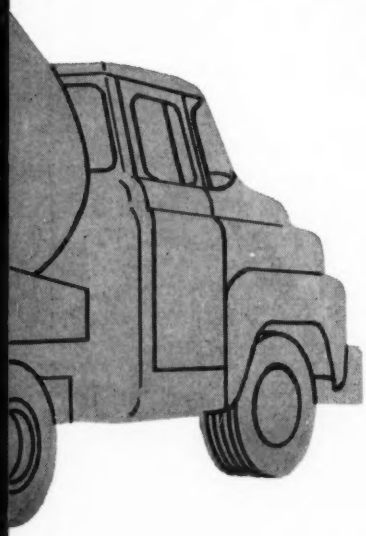
This leadership – in sales, service, research, and technical aid – is the big reason why America's leading industrial companies come to AMSCO for their solvent needs.



Why not use the best? For more information, just call or write the AMSCO office nearest you, or General Eastern Offices, Murray Hill, New Jersey.

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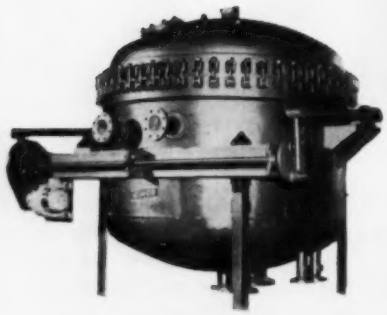

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Modern continuous pressure filters can overcome complications caused by high temperatures . . . high vapor pressures in the liquid . . . high liquid viscosities . . . even crystallization difficulties.

The development, by Eimco, of continuous pressure filters to their present high performance levels has been an important contribution to the science of filtration.

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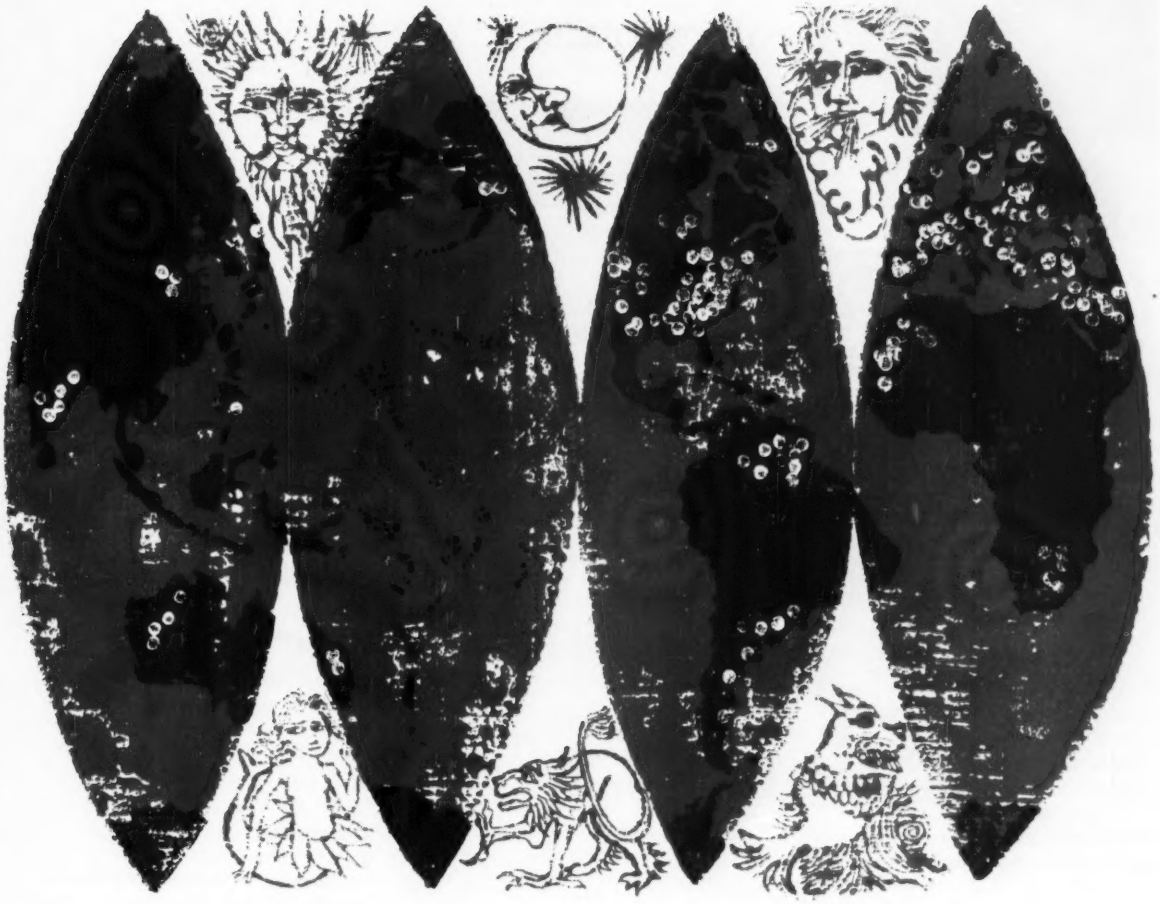

805 reasons a Foster Wheeler plant fits your requirements best

Wouldn't you like to find your new plant running on its scheduled completion date, meeting all specifications, and at a cost within the construction budget? The process industries have come to expect results like these when dealing with Foster Wheeler.

Would you like to see your own process plants handled by designers, engineers and construction men who have successfully put 75 different processes into efficient commercial operation?

And, if you have decided to pioneer a new process, wouldn't you like to have the advantage of Foster Wheeler's long experience with basic processing methods, such as fluidized solids, effluent refrigeration, simplified sulfonation, and efficient heat balancing in chemical operations, etc. This unique experience—plus *procurement knowledge* gained in construction of some 805 large and small plants throughout the world, and *specialized equipment know-how* available through FW's own equipment division—works for you when you use FW design, engineering and construction services.

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Polyol Portraits

the PROPYLENE POLYOLS

From propylene stems a major group in "the world's widest line of polyols" . . . the propylene glycols and the polypropylene glycols. The Dow offering in this important area is characterized by an exceptionally large group of high quality propylene derivatives. As with any chemical product, the contents of the drum or tank car can be no better —and no worse—than the quality of the original raw materials that make it up, so let's start at the beginning.

The uniform high quality of Dow's propylene oxide insures exacting purity in all propylene polyols.

Propylene oxide is, of course, the starting point. And Dow is *basic* in the manufacture of propylene oxide. Dow uses the chlorohydrin process, a method that yields PO of unsurpassed quality, purity and uniformity. Add to this the important fact that Dow has excellent control over all the ingredients that go into propylene oxide. In addition, Dow maintains its own cracking plant for propylene and has extensive facilities for the production of chlorine and caustic. Thus, Dow sets its own high standards of quality for PO and derivatives, and has itself to deal with in measuring up to them.

Dow plants at Plaquemine, Louisiana; Midland, Michigan, and Freeport, Texas, provide abundant supplies of PO and its derivatives. These plants, along with Dow's distribution network and fleet of specially equipped tank cars serve Dow customers throughout the nation.

The propylene glycols come in for their share of the quality spotlight, too. Because of the outstanding quality of its PO, Dow is one of the few companies producing a propylene glycol that qualifies for U.S.P. grade. Propylene Glycol, U.S.P., as well as Propylene Glycol, Industrial, Dipropylene

Glycol and Tripropylene Glycol can be tailored to meet special customer specifications. For example, Dow Technical Service works closely with polyester resin manufacturers using custom tailored Propylene Glycol and Dipropylene Glycol to improve their products. This is one phase of a comprehensive technical service program on polyols, backed by Dow laboratory facilities and experienced field specialists.

Five bulk terminals proffer excellent service on many Dow glycols. They're strategically located at Bayonne, New Jersey; Chicago, Illinois; Freeport, Texas; Oakland and Torrance, California. One of the benefits customers derive from Dow's many years of experience with glycols is the protection given to shipments. Drums lined with epoxy resins are used to prevent iron pick-up and guard against contamination. Aluminum tank cars are also employed to protect the purity of glycol bulk shipments.

Polypropylene glycols present another interesting aspect of the polyol family. This sizable selection of light colored liquids finds its way into a multitude of products, ranging from paints to automotive products and back to urethanes. They offer excellent lubricity and solvency, as well as many other properties in highly useful combinations.

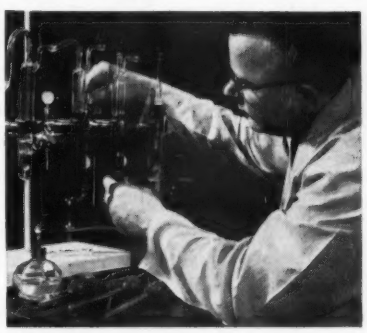
However, it is not so much their versatility that distinguishes Dow PPG's, as these two salient facts: (1) Again, because of the superior quality of the PO and other basic raw materials, these polyols offer uniform purity and rigid adherence to specification. (2) In the hands of "the men that make the most of them", Dow's crack polyol team, the right PPG can be readily selected for every job. An important note is the fact that in many cases, Dow tailors polypropylene glycols to meet special requirements.

All these plus factors you get with PO and its derivatives when you buy from Dow are the result of one underlying fact of chemical life . . .

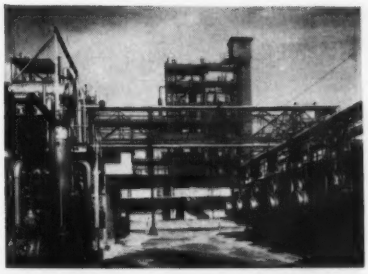
Dow is Basic in Polyols—
Whether you're in the market for glycols, PPG'S, PEG'S, glycerine or any of the hundreds of other Dow polyols, you always receive these benefits:

1. You always get the highest quality and uniformity in Dow polyols because Dow makes and controls the quality and uniformity of all the *ingredients* for all their polyols.

2. You are assured of plentiful, continuous supply. As Dow itself is the original source for all raw materials, it better controls factors of availability.



Crack technical service team answers customer problems from coast to coast.



Dow polyol plants strategically located at Midland, Mich., Freeport, Texas and Plaquemine, La.

3. Multiple production and supply points, at strategic locations throughout the country, assure you of prompt service and delivery.

4. From the creative cauldrons of polyol chemistry at Dow come scores of new polyol products and polyol improvements each year. There are literally *no material limits* to the range of new developments that can be custom-made for Dow customers!

★ ★ ★ ★

It's easy as falling off a drum full of polyols to get in touch with "the men that make the most of them". This team of scientists, engineers, production and marketing specialists —all highly experienced in polyols— is at your service. Call the Dow sales office in your area, or write THE DOW CHEMICAL COMPANY, Midland, Michigan, Chemicals Merchandising Department 1105AM10-17.

THE POLYOL FAMILY TREE

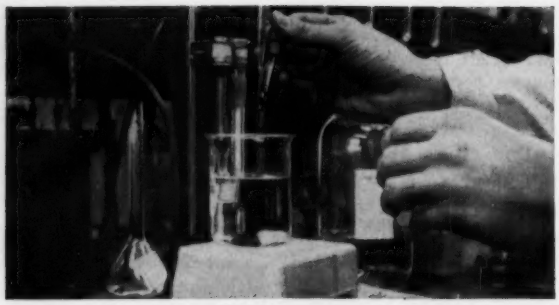
Main branches include:
Glycerine • Glycerine USP
Glycerine USP 99.5%
Propylene Glycol, Industrial
Propylene Glycol USP
Dipropylene Glycol
Tripropylene Glycol • Ethylene Glycol
Diethylene Glycol
Triethylene Glycol
Tetraethylene Glycol
Polyethylene Glycols
Polypropylene Glycols
Polystyrene Glycols
Polyepichlorohydrin • Hyprose® SP80
Hyprin® GP25 • Polybutylene Glycols
Styrene Glycol • Dowanol® 122
Polyglycol 11 Series
Polyglycol 13 Series
Polyglycol 15 Series
Oxides:
Ethylene Oxide • Propylene Oxide
Butylene Oxides S • Styrene Oxide
Epichlorohydrin

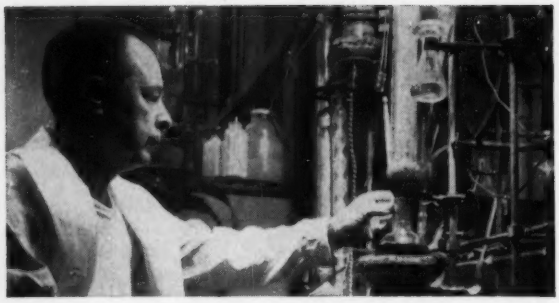
The Polyglycols number many active members, among them three new products developed by Dow research—polyepichlorohydrin, polystyrene glycol, and polybutylene glycol. All three are adaptable as intermediates in the production of the new polyurethanes and in the surfactant field. Many promising applications also exist in the paint, petroleum, detergent, plastic industries.

The Polyethylene Glycols are available in twelve molecular weights from E200 to E20,000, and ranging from viscous liquids through waxy and hard tough solids. Very useful as plasticizers, lubricants, solvents and as carriers in cosmetic and pharmaceutical preparations.

The Polypropylene Glycols "P" series liquid through entire molecular weight range, P400 through P4000. Employed as lubricants, solvents, plasticizers and anti-foam agents. Polyglycol P2000 (resin grade) has gained widespread acceptance for use in urethane foams.

THE DOW CHEMICAL COMPANY • Midland, Michigan DOW





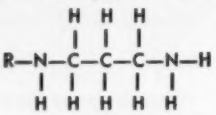
A look at today . . . and a glimpse

The Duomeens®

Armour's N-alkyl trimethylene diamines—trade-named Duomeens—are industrial or technical grade chemicals with many diverse applications.

The Duomeens contain both primary and secondary amine groupings. Being strong difunctional bases, they exhibit greater cationic activity than the corresponding primary amines. The adsorption characteristics of the Duomeens enable them to form strongly bonded organophilic or hydrophobic films on surfaces of metals, textiles, plastics, silica, minerals, cellulosics, etc.

The Duomeens have this general structure:



"R" represents an alkyl group derived from a fatty acid; i.e., Duomeen C—Coconut; Duomeen S—Soya; Duomeen O—Oleic; and Duomeen T—tallow.

Where the Duomeens work today

Pigment dispersions. Duomeen T dioleate—the oleic acid salt of Duomeen T—finds wide use by pigment and paint manufacturers. This cationic chemical has proved to be very effective for better pigment wetting, dispersing, flushing and coating.

Some of its important advantages are:

1. Higher grind-numbers with appreciable savings of grinding time and power consumption.
2. Elimination of pigment segregation.
3. Better gloss due to finer particle size and more uniform dispersion.
4. Anti-settling characteristics.
5. No effect on rate-of-drying.

Generally, 0.5% to 3% of Duomeen T dioleate (based on weight of dry pigment) is sufficient for effective dispersion. Naturally, concentrations depend on the materials used and the type of manufacturing process.

For complete data, check "A" in coupon.

Water treatment. The bactericidal effect of the Duomeens and their inherent ability to protect against corrosion makes them important chemicals for various industrial water treatment applications.

For example, the corrosion rate in a brine-water disposal system was reduced 98% by using Duomeen TDO-50.

In other systems, Duomeen CDA-50 has successfully controlled corrosion and bacteria in sea water used for secondary oil recovery systems. And in cooling towers, Duomeen CD-50 effectively combats both algae and slime.

More information? Check "B" in coupon.

Epoxy resins. The problems of thermal shock and mechanical vibration on delicate electronic equipment are being solved by new epoxy resins. One of the additives that makes these resins so effective is Duomeen S—an Armour cationic chemical that has few equals as a flexible hardener.

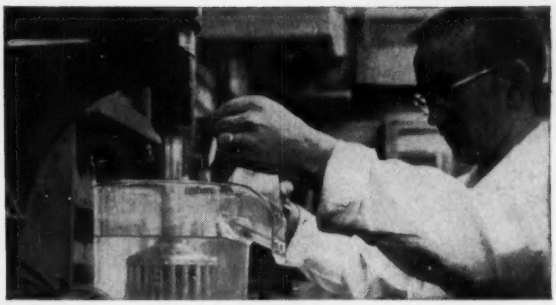
Several epoxy resin manufacturers report that the Duomeen helps eliminate normal internal stresses caused by the expansion and contraction during "potting," and also after the component parts are put into actual use.

In one instance, Duomeen S has been very effective in a system containing 69 parts (by weight of Duomeen S) to 100 parts of the epoxy resin.

Duomeen S is compatible with most of the manufacturers' own epoxy hardeners. And a wide range of properties—from very flexible to rigid—may be obtained by combining these hardeners with different amounts of the Duomeen.

Find out more. Check "C" in the coupon.

Metal working. 10% Duomeen TDO in 300-second oil has increased die life 80 to 100% in bench drawing of soft copper tubing. This lubricant combination also reduces breakers, makes for cooler and cleaner operations and eliminates chattering. Tubing has been drawn from both 85-15 and 90-10 (copper-zinc)



# of tomorrow

from Armour Chemical

brass billets with equally successful results.

Check "D" in coupon for more information.

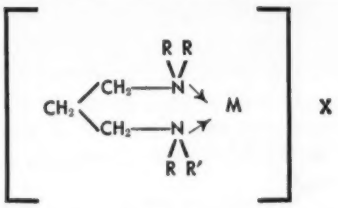
Mineral beneficiation. Duomeen T diacetate—known as Duomac® T—is being successfully used in the mineral flotation field. It selectively separates silica, mica and pyrite from calcite or kyanite. In addition, it separates silica from iron oxides, feldspar from silica and monazite from a variety of heavy minerals.

For more information, check "E" in coupon.

Where Duomeens will work tomorrow

Armour is continuing to conduct tests on methods of clarifying industrial mineral treatment waters containing negatively-charged particles; e.g., clays and fine siliceous materials. In the completed work, the waters were treated with polyamine compounds (Duomeens) or their salts (Duomeen diacetate—Duomac T). These chemicals were used alone or in combination with inorganic coagulants such as aluminum sulfate. When used in combination, the chemicals have a synergistic action. Field results to date have been very encouraging.

Armour's Research and Development Lab has also investigated a new series of compounds of the following typical structure by reacting a long chain aliphatic trimethylene diamine and a bivalent metal:



M is a metal having 2 primary valences. X is an anionic group. R is either hydrogen or methyl. R' is a long chain aliphatic group.

Look to Armour for future information on these potential bactericidal and fungicidal compounds.

Check "F" in coupon for more data.

You probably have an important use for at least one of the Duomeens. Find out. Send the coupon or call Armour today.

NEWS NOTES

London, England. The Armour Industrial Chemical Company, Ltd. and Hess Products, Ltd., have merged under the name Armour-Hess Chemicals, Ltd. R & D and customer service facilities of the two companies will be combined. The new company will service British industry and the United Kingdom export markets.

•

Chicago. The Ammonia Division of the Armour Industrial Chemical Company announces the development of a new, low cost process that will separate dissociated ammonia into its basic gaseous constituents—hydrogen and nitrogen. Working with another producer on this development, Armour Ammonia reports that the process will soon make it possible for processors to derive 96% pure H_2 economically for many varied applications, including hydrogenation.

•

Portland, Oregon. A new Western regional sales office has been opened here by the Armour Industrial Chemical Company. Mr. E. L. Rhoads has been appointed regional sales manager. In addition to servicing Oregon, Washington, Idaho and Nevada, he will work with Armour's sales agent, Paul W. Wood Company, in California and Arizona.

•

St. Paul. Decomposition due to microorganism contamination in a major hide tanning house here has been effectively controlled with only 21 pounds of Duomac C-50 in 2500 gallons of wash water.

Leader in progressive fatty acid chemistry

Armour Industrial Chemical Company

A Division of Armour and Company

Put the versatile Duomeens to work for you

Check here for more information on specific applications.

☐ A ☐ B ☐ C ☐ D ☐ E ☐ F

Send a sample for this application:

NAME_____

POSITION_____

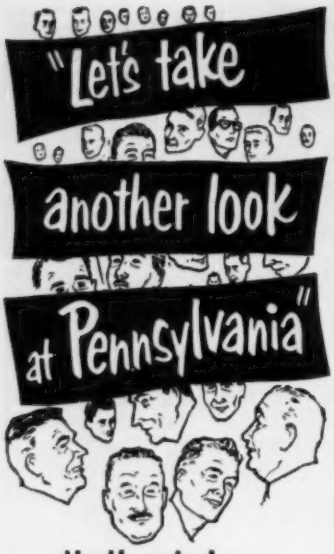
COMPANY_____

ADDRESS_____

CITY_____ STATE_____

CW-10-59

Armour Industrial Chemical Company • 110 N. Wacker Dr., Chicago 6, Ill.



...that's what a growing number of industrial executives are saying and doing!

For the three years—'56, '57 and '58 they announced:

254 NEW PLANTS

224 RE-OPENINGS OF IDLE PLANTS

484 PLANT EXPANSIONS

(Send for the list—address below)

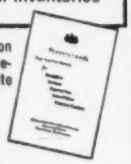
They are finding:

Surplus of industry-minded workers . . . Strategic locations in the great Eastern market with access to major trunk line railroads, and modern highway and Turnpike networks . . . Ports on the Atlantic, St. Lawrence Seaway and Ohio River system . . . All types of industrial raw materials and components . . . 100% low-interest plant financing in labor surplus areas . . . Choice of industrial "parks" and individual plant sites.

In Terms of Taxes:

- No state property tax
- No state tax on personal income
- Manufacturing exemption for capital stock and franchise taxes
- Low local property taxes
- No tax on machinery or inventories

For free copy of "Plant Location Services" pamphlet, or for details on 100% financing, write or call:



Pennsylvania Department of Commerce

Pennsylvania Department of Commerce
South Office Building
551 State Street, Harrisburg, Pa.
Phone: CEdar 4-2912

VIEWPOINT

Solution for Steel

COMPULSORY ARBITRATION may be the only way the steel strike can be settled. That's the conclusion reached by many sophisticated labor relations experts, as a result of the current impasse in the on-again off-again negotiations between the big steel companies and the United Steel Workers (AFL-CIO).

And the danger that some sort of compulsory arbitration procedure will become federal law is greater than many people think. For the timing of the 80-day cooling-off period authorized by the Taft-Hartley law, as far as the steel strike is concerned, is such that it will expire just a few days before Congress reconvenes Jan. 6.

And if no contract is agreed upon by the end of the cooling-off period, Congress is quite likely to require arbitration: legislators are sensitive to public opinion; and public opinion has already turned substantially against both the steel companies and the union for ignoring the nation's interests.

We don't like the thought of compulsory arbitration. We can't believe any management—in steel or elsewhere—wants outsiders judging whether or not it can and should pay wage increases. We doubt that labor wants it.

It can be argued that compulsory arbitration of nationwide strikes is of little direct importance to industrial chemical producers (and to many other segments of the chemical process industries), since many plants are organized by several different unions. But the principle, once established, would be sure to be applied more and more broadly.

Moreover, a direct impact may well be felt by the process industries in the area of prices. Congress, in addition to compulsory arbitration of wage demands and contracts, could decide to control the prices a corporation could charge by making it publicly justify a proposed price increase.

When hearings on the so-called "price notification bill" first began in Congress earlier this year, few Capitol Hill observers gave the measure any real hope of passage. But such is not true now. As one knowledgeable viewer put it: "It was the liberal fringe that was the real push behind the price notification bill hearings. But that's changed. More and more, it's the congressmen who seldom get into the headlines but who are the real kingpins on business legislation who are saying that something has got to be done."

H. C. Johnson

Editor-in-Chief

From Heyden Newport

HOW TO BEAT THE DIRT

In the race for speed, the high power, high temperature aircraft engines of today and tomorrow demand superior lubricants. Of the many problems faced by the engine designer lubricant cleanliness comes first.

High temperature stability and freedom from deposit are the hallmarks of Heyden Newport's neopentyl ester base oil, "Pentalube TP-653". In critical rig evaluations and in 100 hour engine tests – spanning a temperature range of 400° to 600° F – Pentalube TP-653 in a formulation developed at Wright Air Development Center has demonstrated superior performance.

Heyden Newport's synthetic oil was developed specifically for high temperature jet engine requirements as described in U.S. Air Force Target Specification MIL-L-9236A. Stability and cleanliness in recent tests on current engines promise a cleaner, longer-life synthetic base fluid for existing commercial and military aircraft.

Uncompounded Pentalube TP-653 is available in development quantities for compounding and evaluation in various high temperature lubricant applications. We will be pleased to discuss this and other synthetic lubricant base stocks now under development in our laboratories. Market Development Department, Heyden Newport Chemical Corporation, 342 Madison Avenue, New York 16, N. Y. 1988

HEYDEN NEWPORT

HEYDEN NEWPORT CHEMICAL CORPORATION

342 Madison Avenue, New York 17, New York

GALILEO FOUND ONLY ONE ANSWER AT PISA

When he proved his theory about free-falling bodies

Of course, Galileo had only one problem. You may have many. But if yours involve the manufacture of new and profitable products—look to Sinclair for the answers. For instance, Sinclair is the world's largest manufacturer of Paraxylene—the essential ingredient in the new miracle fabrics which have been so well received.

You can benefit from Sinclair's answers because they are based on *performance.* Consider, for example, that new Sinclair plants have always been on stream *ahead of schedule!* Sinclair Product quality has always been *above* customers' specifications. Deliveries are prompt. Supplies are dependable. For the answers to your problems, see

SINCLAIR PETROCHEMICALS, INC.

Subsidiary of Sinclair Oil Corporation, 600 Fifth Avenue, New York 22, N.Y.

PARAXYLENE (98%) • PROPYLENE (99+%) • DURENE (1,2,4,5-TETRAMETHYBENZENE) • ANHYDROUS AMMONIA • AMMONIUM NITRATE SOLUTIONS • AQUA AMMONIA • NITROGEN FERTILIZER SOLUTIONS • ALIPHATIC SOLVENTS • ODORLESS SOLVENTS • AROMATIC SOLVENTS • HEAVY AROMATIC SOLVENT TOLUENE (NITRATION GRADE) • XYLENE (FIVE DEGREE) • SULFUR • SULFONATES (OIL SOLUBLE) • CORROSION INHIBITORS • LUBE OIL ADDITIVES

Sinclair

Business Newsletter

CHEMICAL WEEK
October 17, 1959

France's stabilizing economy is attracting more U.S. firms to establish manufacturing and marketing facilities in that country. Three such moves were revealed last week; and a fourth in Belgium:

• Firestone Tire & Rubber Co. (Akron, O.) says it will build a multimillion-dollar manufacturing facility "outside the Paris area." (It will be Firestone's 18th overseas venture.) Products: a full line of tires, butadiene-styrene copolymers and "special synthetic latexes."

• Pawling Rubber Corp. (Pawling, N.Y.) has licensed Societe des Procedes FIT (Grenoble) to produce its patented extruded rubber products for appliances, construction and housewares. Pawling Rubber will supply FIT with complete technical know-how. The 35-year-old French company produces shoe, automotive and tire products.

• Du Pont will be partner to Sintec, chemical manufacturer in France, with initial capitalization of $150,000 for production of Telvar (monuron) and Karmex (diuron) weed killers at Sintec's (Cerney, Alsace) facilities. France has been Du Pont's major export area for these products. The newly established joint company, Du Pont de Nemours, S.A., will sell 70% of its urea herbicides in France; 30% to Du Pont International (Switzerland) for distribution within the European "Common Market."

• And in Belgium: Amoco Chemicals is setting up the company Amoco Fina S.A. in conjunction with Petrofina S.A. (Brussels) for manufacture and marketing of petroleum product additives. Plant construction will begin immediately. Completion: early '61.

•

A threat to void an interunion jurisdictional agreement marked the closing hours of the Oil, Chemical & Atomic Workers Union convention in Cleveland last week. By acclamation, the delegates instructed President Jack Knight to tell AFL-CIO President George Meany that if the federation's new arbitration machinery (*CW, Oct. 10, p. 82*) fails to iron out jurisdictional wrinkles between OCAW and the AFL-CIO's Metal Trades Council, the chemical union will have to consider withdrawal from the "Miami Agreement,"—a pact that spells out jurisdictional policy between the two outfits. Earlier the delegates had voted a constitutional change in which the threat of withdrawal was implicit (*see pp. 99-104*). But the new move puts OCAW squarely on the record.

•

CPI developments in the U.S. also abounded last week—sparked by strong growth in the thermosetting resin market (*CW, Sept. 12, p. 103*):

• Union Carbide revealed it will build a bisphenol-A plant at its Marietta, O., facility to serve both its own requirements and those of other consumers—especially in production of epoxy resins. Rated capacity: 25 million lbs./year. Completion is set for early '61.

• Reichhold Chemicals, Inc. (which has been moving all Seattle, Wash., operations to Tacoma), plans startup of its previously dismantled formaldehyde unit this week at Tacoma. Capacity: 40 million lbs./-year, somewhat less than combined capacity of the two former separate units. Now under expansion at Tacoma: production facilities for water-soluble resins and emulsions. The firm expects to begin construction after the first of the year of a $4.5-million (30-million-lbs./year) phenol plant.

•

And two Canadian firms plan expansions: Canadian Chemical Co. Ltd. said it would step up, by 40%, production of its petrochemical section (using oxygen instead of air in its petrochemical process). The Aluminum Co. of Canada has decided to resume the $20-million hydroelectric project north of Quebec City, after two years' suspension.

•

Hooker Chemical Corp. reports a 31% increase in net income and a 23% sales increase during the nine months ending Aug. 31. Income after taxes: $10.1 million, compared with $7.7 million; sales, $112 million, compared with $90.9 million.

•

A set of legal battles is sharpening the CPI's business climate.

Drug producers are watching the opening jury trial proceedings of the Justice Dept.'s antitrust suit (*CW, May 24, '58, p. 29*) against five polio vaccine producers (Merck, Eli Lilly, American Home Products, Pitman-Moore, and Parke, Davis) in Trenton. Government attorney Lewis Bernstein predicts it will take him only three to five weeks to prove that producers charged government agencies equal prices for Salk vaccine while their cost varied. Defense attorneys expect a ten-week trial.

•

Ethyl Corp. last week filed a complaint in the U.S. district court in Delaware against Hercules Powder, Stauffer Chemical, and Texas Alkyls (jointly owned by Hercules and Stauffer). Ethyl and Hercules both hold Ziegler licenses on U.S. patent for production and application of aluminum alkyls. Ethyl asserts that both licenses are nonexclusive but that Hercules has been claiming exclusive sales rights on alkyls manufactured under the patents and has threatened Ethyl and Ethyl's alkyl customers with infringement suits. (Stauffer and Texas Alkyls are not directly involved in the charge, but were made defendants "in case" the contested rights had been transferred to them.) Ethyl has asked the court to declare that Ethyl and its alkyl customers are not infringing patents controlled by or licensed to Hercules and to issue an injunction restraining Hercules or its associates from suing or threatening Ethyl or its customers. Hercules says it's not ready to comment on the charge.

•

In the Jeenie-Genie trademark fight between Colgate-Palmolive and Jay F. Conley Co., the U.S. court of appeals in San Francisco last week suspended the injunction against sale of C-P's Genie in 14 Western states until it rules on the latter's appeal.

SODIUM metallic

one metal begets another

The alchemist of old tried to transmute one metal into another.

Today... with the aid of metallic sodium... it is possible to produce a virgin metal from its salt. Titanium, hafnium, tantalum... columbium, thorium, zirconium... these and other metals can be produced swiftly and economically with sodium.

Sodium is easy to handle and because of its low melting point can be pumped, piped, metered into the reactor. One of our experienced Chemical Engineers will be glad to call and discuss with you the many advantages of this versatile metal.

ETHYL CORPORATION, NEW YORK 17, N. Y. • TULSA • CHICAGO • LOS ANGELES

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ETHYL
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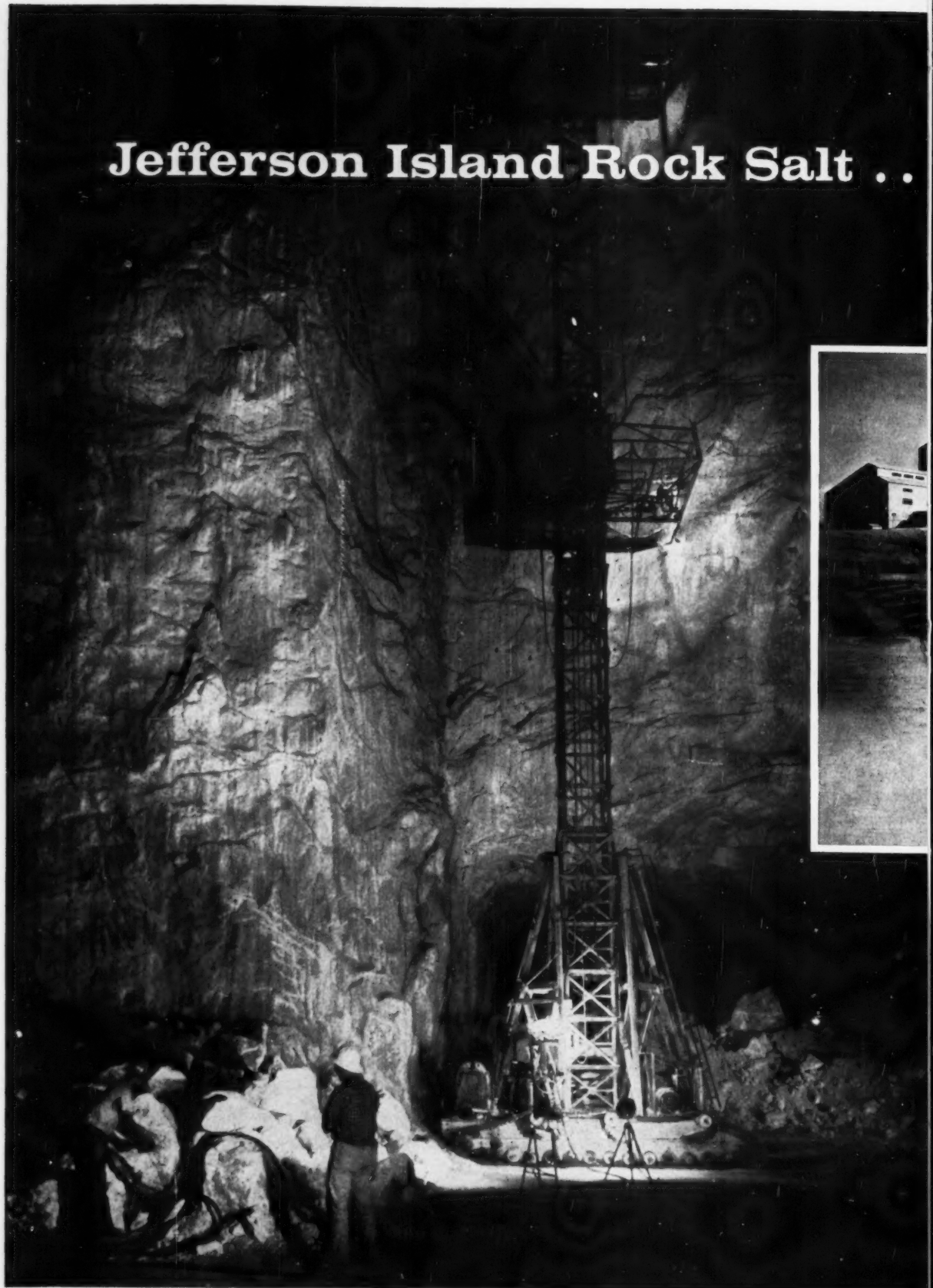
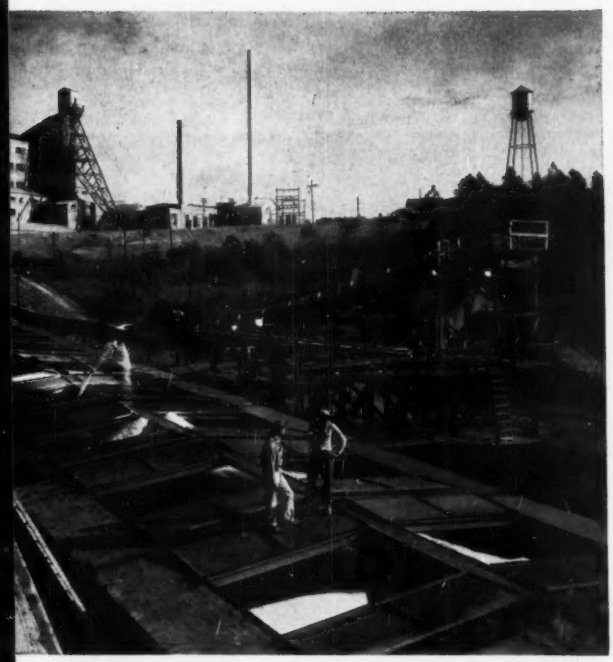

Jefferson Island Rock Salt . .

.. so pure that every chemical manufacturer benefits



The picture above shows rock salt being loaded into barges at Jefferson Island, La., for movement through the Inland Waterways. Many chlorine, synthetic rubber and other heavy industrial plants use barging to effect both economy and service.

For many years, rock salt from Jefferson Island has made possible many economies in chemical processing.

Mined in Louisiana from one of the world's purest deposits, this rock salt results in a consistently better end product—without the costly side reactions of impurities found in less pure salt. The big story is up to 99% purity at the source.

TWO GREAT NAMES MERGE AS ONE

Recently, the Jefferson Island Salt Co., merged with Diamond Crystal, a company known for more than 70 years as a quality producer of flake and granular salt. For example, Diamond Crystal is the leading supplier of salt to high quality food processors.

Jefferson Island Division, on the other hand, is the largest supplier of industrial rock salt by barge on the inland waterways. In fact, they pioneered the first complete ocean-going barge movement of salt to Gulf Coast chemical plants.

INHERENT PURITY—KEY TO COST SAVINGS

The inherent purity in Diamond Crystal Salt is a major factor in *all* industries.

In addition, maximum customer economies and service can result from using Diamond Crystal's complete facilities.

For immediate service and consultation on your salt problem, call the nearest Sales Office or write: Jefferson Island Salt Div., Diamond Crystal Salt Co., St. Clair, Michigan.

DIAMOND CRYSTAL SALT

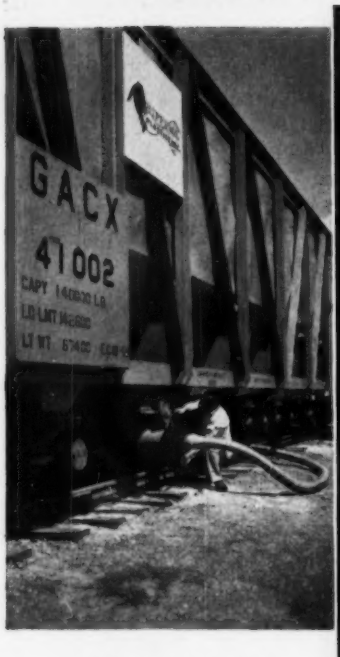
SALES OFFICES: CHARLOTTE, ATLANTA, NEW ORLEANS, LOUISVILLE, BOSTON, NEW YORK, AKRON, DETROIT, CHICAGO, MINNEAPOLIS

PLANTS: AKRON, OHIO .. JEFFERSON ISLAND, LA.. ST. CLAIR, MICH.

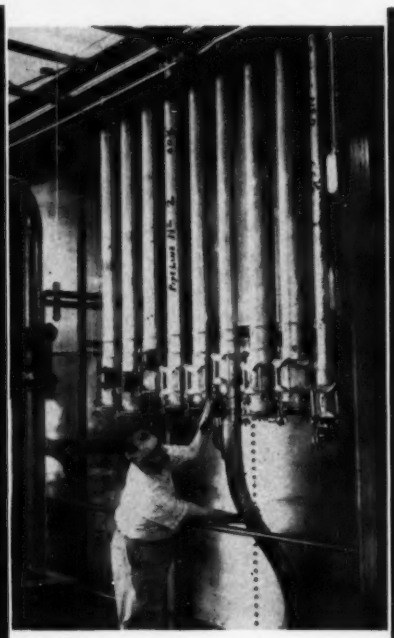
D. M. Nutter, Vice President in charge of production at Chippewa Plastics Company, Chippewa Falls, Wisconsin, reports:

"Airstream conveying pays the rent on our new plant"

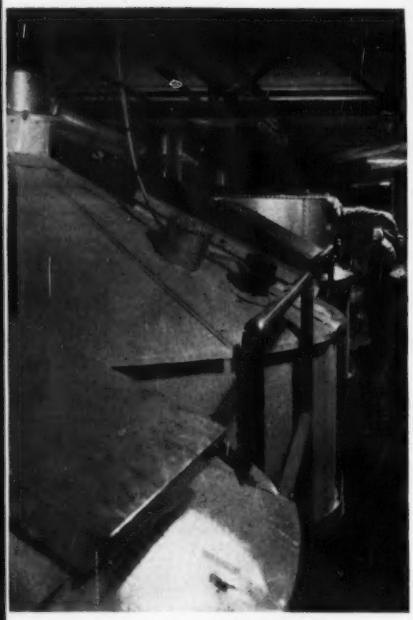
"Savings in labor and materials costs make this possible. Our Dracco Airstream Conveyor System replaces hand-loading methods used in our former plant. Now we move from raw materials to finished product . . . without manual handling. Here's how:"



"Bulk polyethylene for our film producing process is unloaded quickly, cleanly, smoothly. Once turned on, the system requires only part-time attention of one man."



"The suction-pressure system draws material to the Airstream Receiver, then blows it into any of 12 storage silo inlets. Conveying air is thoroughly filtered to prevent contamination. The quick-disconnect hose is easily switched from one inlet to another."

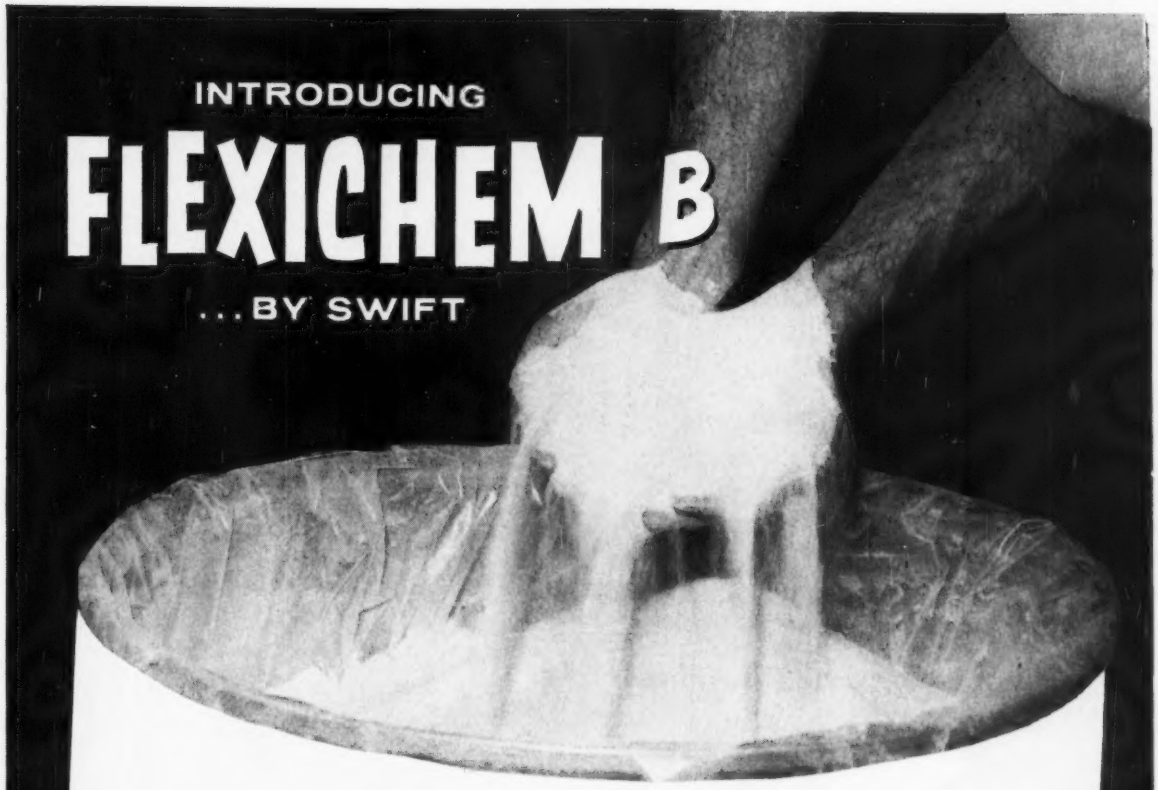


"Out-of-the-way conveying lines distribute different polyethylene resins to storage. The system handles a million pounds of material a month. It's been foolproof, maintenance-free, easy to operate. We believe it shows the way materials handling is going."

Growing industries, like plastics processing, are quick to pick up better ways of doing things. As you move ahead on progressive programs, consider air conveying for your bulk materials. Call on Dracco to help.

DRACCO DIVISION OF FULLER CO.
4080 East 116th Street • Cleveland 5, Ohio

DRACCO *airstream* conveyors
dust control equipment



INTRODUCING

FLEXICHEM B

...BY SWIFT

$NaC_{18}H_{35}O_2$

SODIUM STEARATE

(WATER SOLUBLE)

Swift's Sodium Stearate is a new water soluble Metallic Complex. It is a consistently fine, highly uniform powder that is low in moisture and offers exceptional heat resistant properties.

Because of its uniformity and fineness, it will disperse rapidly and thoroughly in water or solvent systems to help produce a *controlled* jelling action. It has been used as a bodying agent in the cosmetic field for shampoos, creams and other viscous products.

These same qualities may suggest an answer to *your* specific processing problem. Write for details on trial or sample quantities.

FLEXICHEM is Swift's trade name for a family of commercially pure complexes made possible by a new simplified reaction process. The benefit of Swift's development experience in utilizing stearate salts is available to serve you. Write for details.

SWIFT & COMPANY
Soap Department
4115 Packers Ave. • Chicago 9, Illinois

GENERAL PROPERTIES
FLEXICHEM B

Type of salt:	Mono
Physical form:	Uniform powder
Fineness:	100% through 20 mesh
Color:	White
Odor:	Bland
Bulk density:	27 lbs. per cu. ft.
Melting point:	240 C. (Determined by Gradient Bar)
Iodine number:	2 maximum
Moisture:	4.1%
Free fatty acid:	1.0%
Total ash:	16.5%
Solubility:	Soluble in water and hot alcohol. Insoluble in esters and ketones, benzene, toluene, Zylene, Carbon Tetrachloride, vegetable and mineral oils.

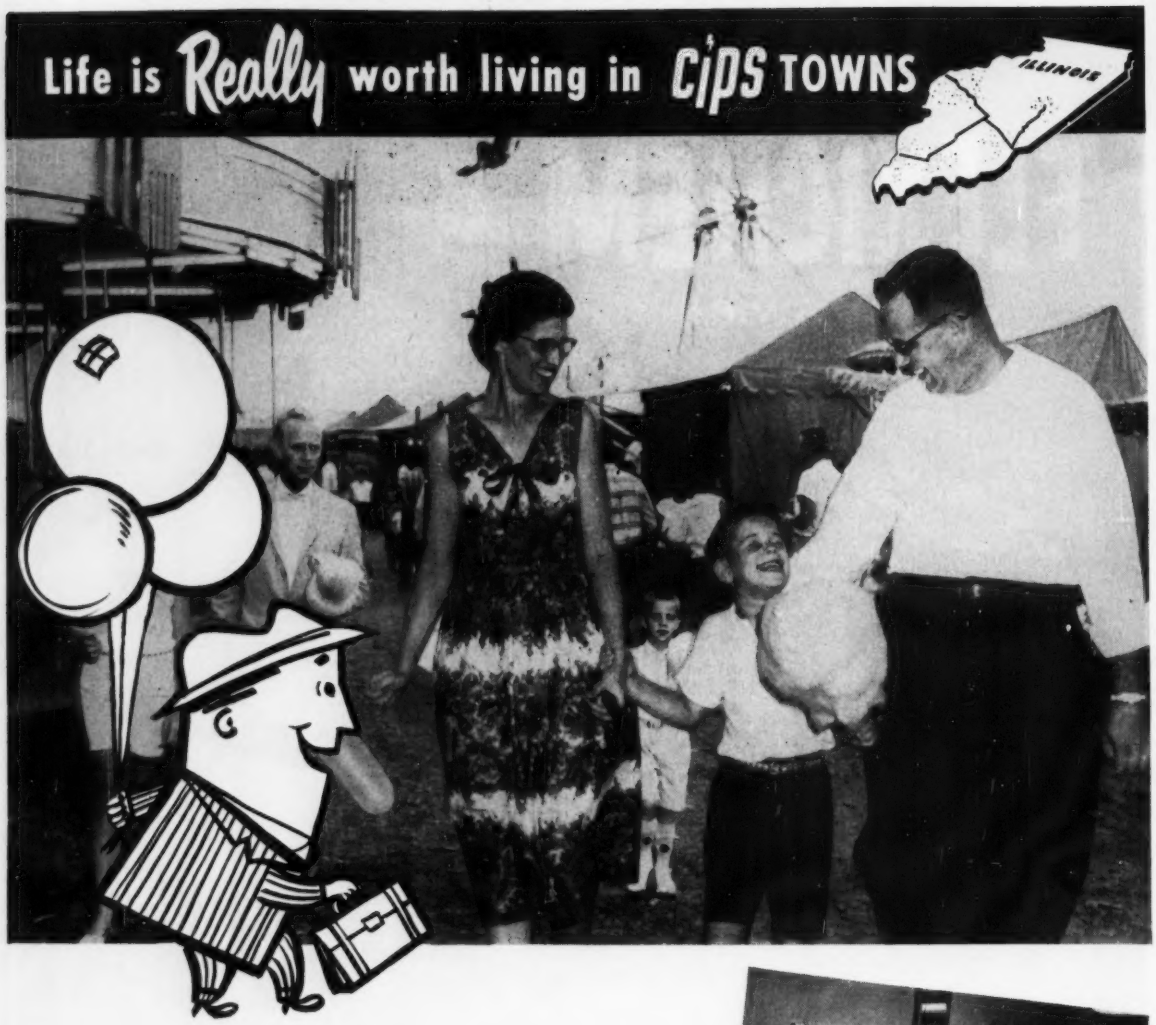
For further details, ask for Bulletin 43.

Swift
104TH YEAR

S-55

To Serve Your Industry Better

Life is *Really* worth living in CIPS TOWNS

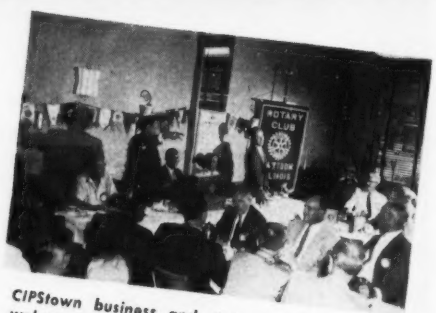


Industry has found that employees work better where they live better. In small and medium-size communities such as those served by Central Illinois Public Service Company, people just seem to enjoy life more.

Home is only minutes away from the plant or office, allowing more time for recreation, hobbies and the family . . . more time to take part in civic activities. There are good schools, churches and other assets important to good living.

Couple these advantages with dependable transportation, nearness to major markets and distribution centers, friendly local and state governments and a diversified labor supply. They all add up to efficient and profitable operations for new and expanding industry.

There's a CIPStown that fits the needs for your new plant. Write, wire or phone our Industrial Department for confidential plant site assistance.



CIPStown business and civic groups seek and welcome participation of newcomers in community projects. Newcomers soon develop that important feeling of "belonging."

Modern schools in CIPStowns have high educational standards . . . emphasize well-rounded development of youth.

CIPS **CENTRAL ILLINOIS PUBLIC SERVICE COMPANY**
GENERAL OFFICES: ILLINOIS BUILDING, SPRINGFIELD, ILLINOIS

A NEW
basic source for CITRIC ACID, U.S.P.

Here is an unusually pure citric acid produced in the Midwest by Miles Chemical Company's unique deep fermentation process. Ready for immediate shipment in truck-load quantities.

For years Miles has produced a considerable volume of citric acid mainly for its own use in pharmaceuticals. A unique deep fermentation process, pioneered by Miles, yields a product remarkably free from contamination and meets Miles' most strict purity and mesh specifications.

This deep fermentation capacity has been expanded to provide a reliable, large volume supply of citric acid, U.S.P. for the open market. It's ready for shipment when and where you need it. Our plant is centrally located . . . a convenient producing point with excellent transportation routes in all directions.

Write for full details. A Miles Chemical representative will be happy to discuss your requirements at your request.

Miles Chemical Company

division of Miles Laboratories, Inc.
Elkhart, Indiana

Blockson man examines a detergent compound improved by Sodium Tripolyphosphate.

A sodium phosphate may do it better ....ASK THE BLOCKSON MAN!

There is a Blockson phosphate to improve your processing or end product wherever you need an efficient sequestrant, viscosity controllant, precipitate inhibitor, emulsifier, dispersant or water softener.

You'll find phosphates in products or processes as varied as ceramics and oil well drilling, rust removal and textile processing, latex paints and photographic film. Applications cross many industry lines.

And, throughout the detergent field, Blockson phosphates are helping synthetic and soap based products achieve new highs of consumer acceptance.

If you use water in your processing, chances are good that "a Blockson phosphate can help you do it better for less".

You can find out by asking the Blockson man—he is a phosphate specialist. He can show you which of the many Blockson phosphates is the most economical to use in your process or formulation—new or old.

Talk with the Blockson man—or Blockson distributor—he is trained and ready to work with you.

OLIN MATHIESON CHEMICAL CORPORATION
BLOCKSON

BLOCKSON CHEMICAL COMPANY

Joliet, Illinois/Division of Olin Mathieson Chemical Corporation

OPINION

Add Ducilo

TO THE EDITOR: In your recent review of the market for fluorocarbons (*CW, June 27, p. 83*), you publish a list of manufacturers of fluorocarbons around the world. It should be pointed out that the name of Ducilo SAIC was omitted under Argentina. This company, a subsidiary of E. I. du Pont de Nemours, has the largest installed capacity of fluorocarbons in Argentina: 1360 tons/year. The material is sold under the Freon tradename.

I. J. ALFARO
Director of Sales
Ducilo SAIC
Buenos Aires

PA 'Suckers'

TO THE EDITOR: Your article, "How Cheating Dealers Bid for Sales: Phony Wares and Prices" (*CW, Aug. 8, p. 84*) is absolutely on the level.

Barnum was right—a sucker is born every minute. If your article could be in every newspaper in the country, it might be a big help toward enabling purchasing agents to recognize the unethical supplier or representative. through either his literature or his personal call.

Every government agency, as well as every member of the U.S. Senate and House of Representatives, should receive a copy.

A. LYMAN
Owner
Power Plant Products Co.
Boston

MEETINGS

Electrochemical Society, fall meeting, Deshler-Hilton Hotel, Columbus, O., Oct. 18-22.

The Magnesium Assn., 15th annual convention; theme: magnesium—a review and projection of technology and trends; Roosevelt Hotel, New York, Oct. 19-20.

Chemical Institute of Canada, ninth Canadian High Polymer Forum, Guild Inn, Toronto, Ont., Oct. 19-21.

American Institute of Consulting Engineers, annual dinner, Washington, D.C., Oct. 20.

Federation of Paint and Varnish Production Clubs, 37th annual meeting and 24th Paint Industries Show, Convention Hall, Atlantic City. N.J., Oct. 20-24.

American Standards Assn., Sheraton-Cadillac Hotel, Detroit, Oct. 20-22.

Our beat is IMPACT MILLING . . . If yours is particle-size reduction, mixing, grinding, or dispersion, we probably can help you do the job better and at lower cost.

Impact Milling (the application of centrifugal force and shattering impact) can do many jobs better, faster or with closer tolerances than conventional milling or grinding methods.

- The IMPACT MILL has no critical clearances to maintain (consistent performance over extended periods)
- The IMPACT MILL has little friction loss (higher efficiency from horsepower input)
- The IMPACT MILL contributes minimum temperature rise (unequalled for processing heat-sensitive materials)
- The IMPACT MILL can consistently process to a narrow band of particle sizes (minimum of fines or oversizes for recycling)
- The IMPACT MILL handles a wide range of materials from soft food slurries to highly abrasive minerals

See us at Booth 645 at the Chemical Show

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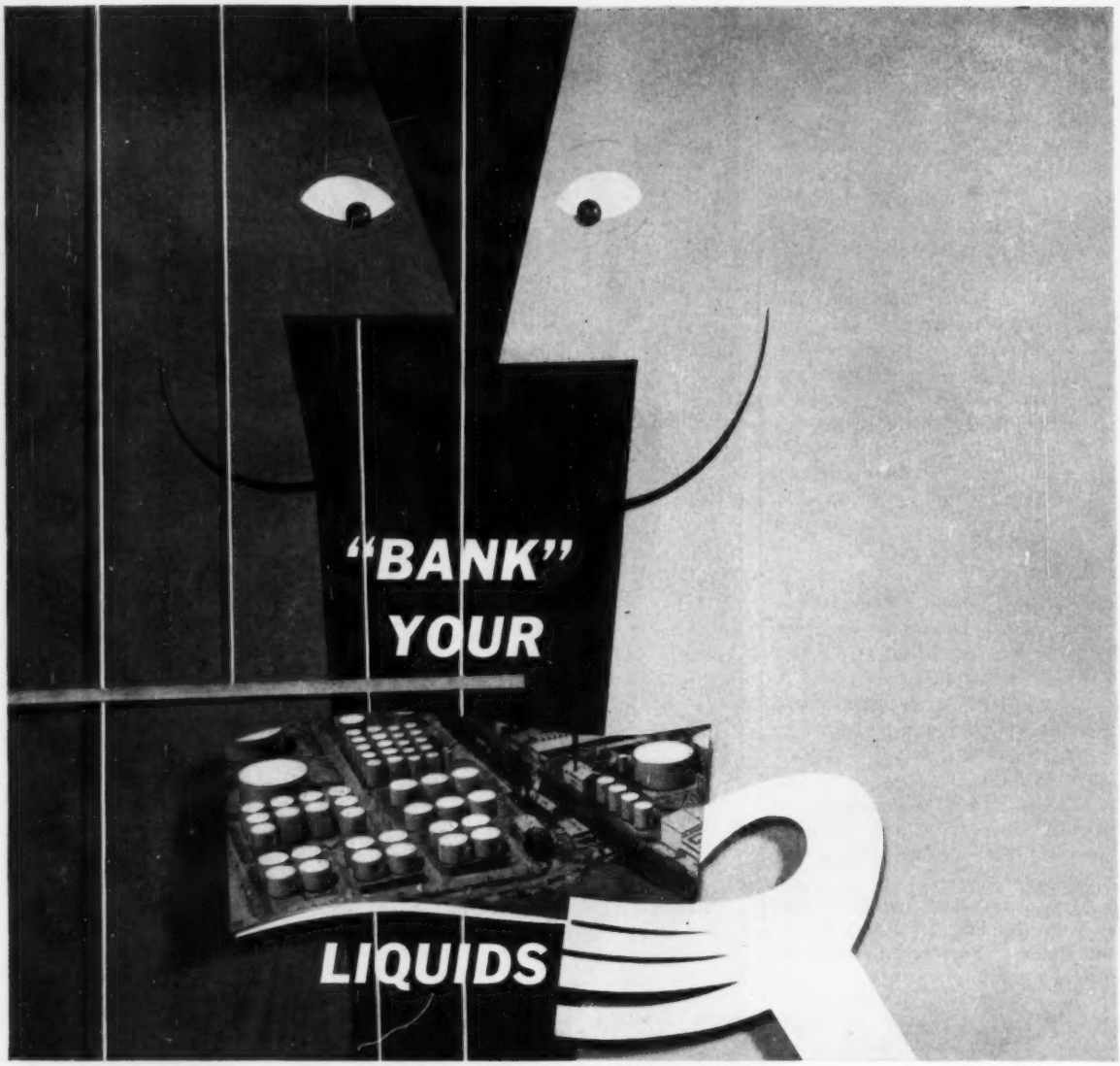
Division of **SAFETY INDUSTRIES, INC.**

P. O. Box 904 • New Haven 4, Connecticut



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General American Tank Storage Terminals give you a wide range of "in & out" handling methods!

At General American's Tank Storage Terminals, you can bring liquids in or take them out by tanker, barge, tank car, truck, pipeline or packaged.

Today, the six General American Terminals offer you nearly 16,000,000 barrels of storage capacity. Terminals are located within 500 miles of *almost all* the top markets. You get these benefits:

- Complete privacy of storage.
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- Avoid the capital expenditures of a tank storage terminal and its operation.
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Terminals located at:
Carteret, N.J. (Port of New York), Chicago, Ill., Corpus Christi, Texas (Port of Corpus Christi), Pasadena, Texas (Port of Houston), Galena Park, Texas (Port of Houston), Good Hope, La. (Port of New Orleans).

GENERAL AMERICAN TANK STORAGE TERMINALS
GENERAL AMERICAN TRANSPORTATION
135 South LaSalle Street,

TANK STORAGE TERMINALS GENERAL AMERICAN TRADE MARK

a division of
CORPORATION
Chicago 3, Illinois

SILICONE NEWS from Dow Corning

For A Sales Glow: Silicones

Quick, Deep, Lasting Gloss Keeps Your Polishes Popular

It takes more than a single ingredient to make a successful polish. It takes a lot of formulating skill and sound marketing decisions, too. But among all the variables, this factor remains constant: *including Dow Corning Silicones in your product pays off*, literally. This is true whether your polish is for glass, autos, furniture, appliances . . . silicone fluids improve the formulation — help increase sales.

Dow Corning silicone fluids make polishes easier to spread . . . quicker to shine-up . . . richer and deeper in gloss . . . longer lasting. Silicones repel water in a really superlative manner . . . resist spotting . . . withstand weathering and oxidation, too.

Taken together, these qualities mean less effort, less time and better results for the consumer. That in turn means a better product image for you . . . more of those all-important repeat sales. To get the maximum in consumer desire-to-buy, give Dow Corning Silicones a prominent place in your polish . . . and on your labels, too. Consumers are aware of the protection silicones provide . . . are sold on products that contain them!

Dow Corning development chemists have compiled extensive information on silicone fluids in polishes — are continually working to develop new products for new applications. For the latest and most complete information on Dow Corning Silicones for different types of polishes, contact our nearest branch office or write Dept. 3322.

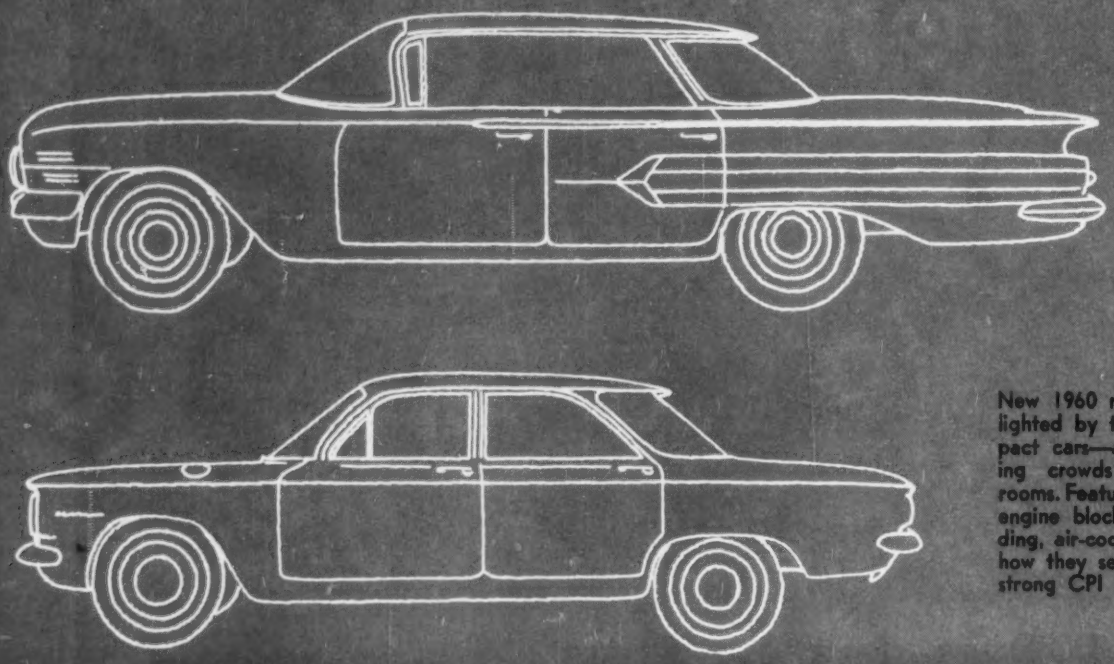
Your nearest Dow Corning office is the number one source for information and technical service on silicones.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

Chemical Week
October 17, 1959



New 1960 models—highlighted by the new compact cars—are now pulling crowds into showrooms. Features: aluminum engine block, foam padding, air-cooled motors—how they sell could have strong CPI impact.

Big Cars or Small, Rising Auto Sales

The much-heralded U.S.-made "small" cars are rolling out of Detroit into the nation's automobile showrooms this week. With them roll predictions that upward of 1.5 million such cars will be sold next year. If these forecasts pan out, it could mean a broadening outlet for a raft of chemical process industries products.

But the heartening fact is that no matter which the auto-buying public chooses—the smaller cars or the conventional-size new models—chemical process firms can count on a hike in sales to the auto industry, at least for the coming year.

Acceptance of the new "compact" autos in the years beyond '60, however, may well open opportunities for CPI firms to develop and supply new, durable, lightweight, low-cost materials that will help auto makers in their drive to push prices of the new models down toward $2,000.

An early reading on public acceptance of the new compact cars: in Detroit last week, a spot-check by *CW* disclosed that Chevrolet dealers were selling 90% of their initial stock of Corvairs on the first day of showing. Ford and Chrysler dealers were confident they would do as well with their Falcons and Valiants.

Thus with the nation's "Big Three" auto companies bearing down on the smaller-car market, it's reasonable to anticipate changing trends in type and volume of chemical products sold to the auto industry.

New Synthetics Needed: And a *CW* survey—completed last week—shows that auto companies and chemical companies alike anticipate that some of these changes may be substantial.

For one thing, it appears there'll be a rising demand for substitutes for steel—and then substitutes for substitutes—as Detroit's weight-conscious engineering staffs move toward design standards normal to the aircraft industry.

Accordingly, chemical companies are trying to step up development of new products that could win at least temporary footholds in production of the new models. At the same time, both auto and chemical industries are banking on two strong factors—over-all market growth in proportion to the country's growing population (in which car-coveting young people are an increasingly large component) and the trend toward ownership of two (and sometimes three) cars per family—to boost sales.

Big Sales Gains Forecast: By '65, Henry Ford II has predicted, a 7.5-million-car/year market will be the rule. And American Motors' George Romney has even gone so far as to say that, by then, compact cars will comprise 60% of the total market.

Seemingly underlining Romney's statement is the revelation of two newer compact models to reach showrooms late this spring: General Motor's aluminum-engined compact model for sale by Buick, Oldsmobile and Pontiac dealers; and the Comet, to be launched by Ford's Mercury-Edsel-Lincoln Division.

CW PHOTO—J. SYDLOW

Will Run Up CPI's '60 Revenues

As the new cars gain momentum, the innovations in design that accompany them—air-cooled engine, aluminum engine block, sintered metals—can be expected to find their way into medium-priced, larger cars, bringing further sales opportunities to CPI companies.

Product Pinch? The new compact cars, however, weigh 600-1,000 lbs. less than standard cars. A mass swing to compact cars could result in a significant loss of business to some auto industry suppliers. Per unit, the compact model requires about 10% less tire cord, 14% less upholstery, is relatively bare of chrome, and uses less gasoline per mile than its big brothers.

The smaller cars use substantially less glass. Yet—in apparent anticipation of a big rise in total car sales—Ford Motor Co. is planning a multi-million-dollar expansion of its auto glass plant at Nashville, Tenn. Present capacity: 400 tons/day.

And—despite increased mileage/-gallon given by the new smaller cars petroleum people estimate that gasoline demand in '60 will be "somewhat up from '59's anticipated 63 billion gal."

Rubber producers, too, expect to expand their auto industry sales, even though consumption stands to drop 20 lbs./car in original equipment tires.

U.S. Rubber says the compact car uses a 13-lb. tire, the conventional car a 17-pounder.

In '59, new U.S.-made cars will take an estimated 29 million original equipment tires (based on sales of 5.3 million full-size and 500,000 smaller Larks and Ramblers). This comes to 450 million lbs. of rubber for full-size new cars, 32 million lbs. for the smaller models—a grand total of 482 million lbs. of rubber.

The auto industry estimates that 4.7 million full-size cars and 1.5 million compact cars will be sold in '60. That can be translated into 23.5 million tires for full-size cars, 7.5 million for compact models. Total: 496 million lbs. of rubber—a 14-million-lbs. gain over '59.

U.S. Rubber spokesmen regard compact cars as evidence that the auto industry is "downgrading" its product, a trend that could hurt sales of rubber for nontire auto uses. "A decline in luxury means a decline in rubber uses—as rubber in a car means quiet and comfort," say the U.S. Rubber people.

Aluminum Scores: Aluminum usage, on the other hand, is greater in the new models. Biggest user: the air-cooled, rear-mounted Corvair engine; 20% of its 332 lbs. is aluminum.

David Reynolds, sales vice-president of Reynolds Metals Co., predicts that the average car will contain 60 lbs. of aluminum in '60; 100 lbs. in '61 (it was 12 lbs. in '48). Goal: 400-500 lbs. in five years. Aluminum engine blocks are reliably forecast for the Buick-Oldsmobile-Pontiac Division's forthcoming compact car, and "possibly" for Chrysler's Valiant and Mercury-Edsel-Lincoln's Comet. In fact,

many automotive experts claim that aluminum now is cost-competitive with steel (as a result of the Kettering-developed principle of transporting molten metal directly from reducing plant to casting plant). General Motors, Ford and others are designing aluminum into transmission housings, intake manifolds, carburetor bodies and brake drums. Aluminum radiator cores are being tested. And aluminum wheels, with integral hub and brake, are optional on '60 Pontiacs. Potential market in this application alone: 70 lbs./car.

Aluminum as a structural material is now restricted to trucks—at least in this country. (One of GM's models has an aluminum cab.) In auto trim, aluminum is solidly established. And aluminum bumpers are being tried on buses.

Magnesium Push: Spurred by Dow Chemical, magnesium is pointing for a bigger share of the auto business. Although today the average car contains but 5 lbs. of this metal, the goal is 50 lbs./car. And Dow says that recent "technical breakthroughs" will permit competitive pricing on a volume-equivalent basis. But for now, magnesium is limited to use in fan spacers and oil filter housings; an order for magnesium instrument housings is expected. Magnesium's big handicap: it is subject to corrosion, particularly by road salts.

Sintered metals (especially those that can be impregnated with lubricant) are in wide use in new car models, big and small; and may soon be utilized in suspension and steering gear bearings as the industry moves to eliminate grease fittings. Chevrolet is testing sintered metal brake linings in its Corvette.

A central hydraulic system, said to be just around the corner, would jump brake fluid usage per car from 1 pt. to 1 gal.

Plastics Trend: The trend to plastics continues in the '60 auto models.

Injection-molded, high-impact polystyrenes compete with sheet metal. Ford's use of plastic for front-seat side shields is expected to save the company $500,000; formerly stamped from steel, this component required nine separate fabricating operations. For appearance items—e.g., steering wheels—the butyrates are a major material. Nylon is replacing steel in small bushings and bearings.

New copolymers of styrene and methyl methacrylate could threaten consumption (10-12 million lbs./-year) of straight acrylics. Du Pont, however, says its Lucite acrylic may replace more of the glass used in reflectors.

But the all-plastic body—a dream of the plastics industry and a reality only in the Corvette—won't get its big chance until satisfactory production techniques have been developed, according to auto industry and plastics spokesmen. Auto undersides still require a corrosion-resistant coating, which delays—but does not eliminate—rusting out.

More attention will be given to corrosion inhibitors for auto finishing this year. And though small cars use less paint than their forerunners (*CW, Oct. 3, p. 85*), car makers will be buying upward of 12.2 million gal. of paint, 250 million gal. of undercoat, as well as increasing quantities of sealers, primers and mineral spirits.

Decline in Uses: Current trends will write some entries on the other side of the ledger, too.

- Methanol is on the way out as an antifreeze; auto makers now almost universally specify glycol for factory fill. And another switch may be in store as more test data are accumulated on diethylene glycol and longer-chain glycol ethers. Even further ahead, the factory-sealed cooling system would entirely bypass antifreeze and radiator chemicals.
- The auto chassis requiring no grease appears in at least two '60 models; and the reported perfection of the lubricated lifetime bearing also points to an inevitable decline in the auto lube market.
- Foam rubber is being replaced by urethanes; and tire rubber may be giving way to butyl—already widely used in engine mounts.
- Car upholstery is now about 75% synthetic. Acrylics are making biggest inroads in cloth, vinyls in leather. (But the new compact cars have no carpet at all.)
- Rayon and nylon continue to battle for the tire-cord market, with nylon expanding its share.

In the Labs: Research is leading car makers still farther away from traditional materials. Examples:

- Superstrength steels—Ford reportedly has developed an alloy 50% stronger than sheet currently used.
- Conversion of heat directly in electricity—this is under wraps, present studies are directly applicat to rocket development.
- Gas turbine engines—GM's Al son Division is already in semicor mercial production of the GT 3((gas turbine), said to burn "almc any fuel, short of tar." Ready ava ability is expected from all make by '65 for heavy-duty trucks a buses. Passenger car research slanted toward an "intermediat cycle reciprocating engine that w run on nearly any fuel.
- Sprayed rigid foams—alrea marketed, they're said to be destin to replace insulation materials such felt and glass fiber.
- Transparent synthetics—th would transmit light, block heat.

All of these are still on the horiz —for either big or compact cars. Au industry suppliers are weighing t myriad potential opportunities—b making no forecasts. Monsanto Cher ical expresses the CPI consensus, the auto industry moves into the ne marketing year:

"Like Detroit, we are waiting see what the next two or three yea will bring."

Growing in New Lines

Two more heretofore closely he chemical concerns are preparing offer new common stock to the pu lic. Primary aim: to finance expa sion projects.

- Foster Grant Co. (Leominste Mass.) is planning to offer 100,0(shares of new common stock. At t same time, 22 of its principal stoc holders are jointly putting up 9(000 of their 148,750 previous issued shares.
- Arizona Fertilizer and Chem cal Co. (Phoenix) also is taking pa in a combined new and seconda offering. The company proposes sell 75,000 shares of new commc stock, and three principal stockhol ers are offering 25,000 of their 76 780 shares.

Foster Grant—which is plannir a $4-million construction program f its '60 fiscal year—discloses that 1 month sales (through July 26) we up 27.7%, to $24.8 million, whi net earnings jumped 64.6%, to near $1.6 million. The preliminary pro pectus shows that, although 97%

fiscal '52 sales were in molded astic products, chemical operations w account for more than half of G's business. Sales breakdown for e 12 months ended Aug. 23: polyers and copolymers, 39%; styrene onomer, 18%; molded products, %.

Principal projects in FG's '60 conuction program: increasing styrene onomer capacity at Baton Rouge, ., by one-third; boosting styrene lymers and copolymers capacity at ominster by one-third; constructg and equipping new laboratory d pilot-plant facilities at Leominer; and purchasing additional moldg, thermoforming and extrusion uipment.

Western Move: Arizona Fertilizer d Chemical—a 27-year-old firm at in recent years has been diverfying into industrial chemicals—reorts that, for the fiscal year ended ne 30, sales rose 11.1% to $6.5 illion, and net income climbed .1%, to $209,946. Sales breakdown r the latest fiscal year: fertilizers, .85%; insecticides, 57.75%; instrial and agricultural chemicals, 47%; application equipment, 0.93%.

One major use of proceeds: adncing of $200,000 to Cortez Chemals—a wholly owned subsidiary—r expansion of facilities for producn of emulsifiers, sewage treatment emicals, and industrial cleaning mpounds.

ntitrusters Try Again

Justice Dept. lawyers feel there's no ternative for them but to ask the preme Court to reverse District dge Walter La Buy's recent ruling the Du Pont-General Motors antiust case (CW, Oct. 10, p. 33).

Veterans of the Antitrust Division ll *CW* that, if La Buy's opinion were lowed to stand, it would set a ecedent that would greatly weaken e government's ability to deal with ch major cases as the proposed ethlehem-Youngstown steel merger.

And it appears that the antitrusters nd a good chance of winning a versal. For one thing, they suceeded two years ago in getting the preme Court to overrule La Buy the basic question of legality of u Pont's GM stock ownership. And e justices who made up the '57 ajority are still on the bench.

Drug Prices Defended

Hearings on the Federal Trade Commission's charges against five major producers of antibiotics now are expected to wind up about Christmas time. Two corporation presidents took turns on the witness stand last week, Nobel prize-winning scientist Selman Waksman tentatively is scheduled to testify next week, and a third corporation president is slated to be called next month.

Pfizer President John McKeen and American Cyanamid President W. G. Malcolm last week explained pharmaceutical pricing policies, but Bristol-Myers President Frederick Schwartz's turn comes next month. Waksman—70-year-old discoverer of streptomycin—is to be called as a witness for Pfizer on the patent aspects of the case.

All parties have agreed to ignore holidays to complete the hearings as soon as possible, so sessions were scheduled for Columbus Day, Election Day and Armistice Day. Thanksgiving Day happens to fall in one of the recess weeks.

McKeen and Malcolm both insisted that it was normal, hard competition that kept the trade "list" price of tetracycline at the same level for the past eight years.

To support the defense contention that there is price competition in tetracycline sales, McKeen related that, between July '54 and June '58, Pfizer's bidding price on large-volume government contracts dropped from $24.22 to $11/bottle of 100 capsules (250 mg.).

Similarly, Malcolm recounted the steps by which the price of the first broad-spectrum antibiotic, chlortetracycline—developed by Cyanamid's Lederle Laboratories Division—was slashed from an initial price to druggists of $15 (for 16 250-mg. capsules) in Nov. '48 to the $5.10 rate that has been in effect since Sept. '51.

Macolm said he agreed in late '53 to sell bulk chlortetracycline and production know-how to Pfizer for use in making tetracycline because he felt that Pfizer had him "over a barrel." This was because Lederle was committed to start producing tetracycline the next year, and Malcolm believed that Pfizer had a patent position strong enough to support a lawsuit against Lederle for infringement.

Carbide via rail from Sheffield will supply acrylo plant near Memphis.

Acrylo Query Cleared

The cat is out of the bag: Du Pont's first acrylonitrile plant—now under construction near Memphis, Tenn.—will get its acetylene from Union Carbide. Carbide will make the acetylene from calcium carbide shipped by rail from Sheffield, Ala. (map, above).

It had been speculated that the calcium carbide might be shipped from Air Reduction's plant at Calvert City, Ky.; or that a unit might be added at W. R. Grace's urea-ammonia plant (less than a mile from the Du Pont plant at Woodstock, Tenn.) to produce acetylene from natural gas (*CW, June 27, p. 25*).

To launch carbide production, the division plans to remodel an idle submerged-arc electric furnace that previously was used to produce ferroalloys. This conversion is expected to be completed by mid-'60—several months ahead of the anticipated start-up of Du Pont's acrylo plant.

Union Carbide Metals Co. will forward the carbide to Woodstock (150 railroad miles), where Union Carbide Olefins Co. will use it to generate the acetylene that will be piped to the Du Pont plant.

COMPANIES

Stauffer and Victor stockholders will vote Oct. 27 on the proposed merger of the two companies (*CW, July 18, p. 26*). If they approve, the merger will become effective Nov. 1. As stated in the proxies, the new company's *pro forma* combined assets would total $200.6 million. The Federal Trade Commission has requested information about the proposed merger; but the companies' attorneys insist that the merger would be legal.

•

National Starch and Chemical Corp. (New York) has purchased the stock of American Parboard Corp. (Black Mountain, N. C.) and will operate it as a subsidiary. Both companies include wood particle board among their products.

•

National Research Corp. (Cambridge, Mass.) is exchanging its 50% share of Columbia-National Corp. for $1 million worth of 4% cumulative preferred stock in Columbia-Southern Chemical Corp., a wholly owned subsidiary of Pittsburgh Plate Glass. This makes Columbia-National a wholly owned subsidiary of Columbia-Southern. Reason for the switch: startup costs on C-N's zirconium plant exceeded original estimate, and National Research is unable to provide additional financing. After C-N's deficit is cleared, National Research will be entitled to royalties on zirconium sold for 20 years thereafter, up to $5 million. C-N has a 3½-year, $23-million contract with the Atomic Energy Commission.

•

Miles Laboratories has purchased Dome Chemicals (New York), producer of ethical dermatological pharmaceuticals, for $7.5 million.

EXPANSION

Polyethylene: U. S. Industrial Chemicals Co. plans another boost in polyethylene output. The 50-million-lbs. expansion will bring capacity of its Houston plant to 200 million lbs., total USI capacity to 300 million lbs., by mid-'60.

•

Urea: The Consolidated Mining & Smelting Co. of Canada (Trail, B. C.) has completed plans for its 100-tons/day urea plant, slated to go up at Calgary. The plant is scheduled to be completed in 10 months.

•

Wesson Oil & Snowdrift Co. will install a 325,000-cu.ft./day hydrogen unit (99.6% purity) at its Memphis plant. Girdler Construction will build the unit, which will replace a smaller unit supplying hydrogen for captive use in shortening production.

•

Naval Stores: Reasor Chemical Corp. has broken ground for a $1.5-million naval stores plant at Wilmington, N. C. It will extract resin, pine oil and turpentine from pine stumps.

•

Cyclohexylamine: Abbott Laboratories is building a "small" chemical plant at Wichita, Kan., to make cyclohexylamine, an intermediate of its Sucaryl noncaloric sweetener. Hydrogen, one of the raw materials, will come from the adjacent Frontier Chemical Co. plant. Abbott will tank-car part of the cyclohexylamine to its North Chicago plant for final processing, will sell the rest in drums. The new plant will be called the Wichita Chemical Division, and is the nucleus of further expansions on the site. Emphasis will be on production of chemicals with hydrogenation processes.

FOREIGN

Chemicals/Italy: Montecatini's six-month sales reached $161.7 million this year, up 7% from the first half of '58. Profits were up 9%, to $9.5 million.

•

Chemicals/Argentina: While Economics Minister Alvaro Alsogaray was in the U.S. last week drumming up investments, the Argentine government approved a batch of new foreign ventures. They bring the total of foreign capital invested since May '58 (when the present government took over) to about $175 million, including $52 million in the chemical industry. Among the latest investments approved: a $265,635 expansion of Pfizer's pharmaceutical plant, and an $800,000 joint investment by Montevideo S.A. (Montevideo, Uruguay) and Gerence S.A. (Basel, Switzerland) for a new chemical plant. Meanwhile, Miles Laboratories' $350,000 Alka-Seltzer plant is due to start production within two months, and the government has opened its sulfur processing plant near the Julia Mine in the Andes. It will supply about 40% of Argentine sulfur requirements, estimated at 50,000 tons/year.

•

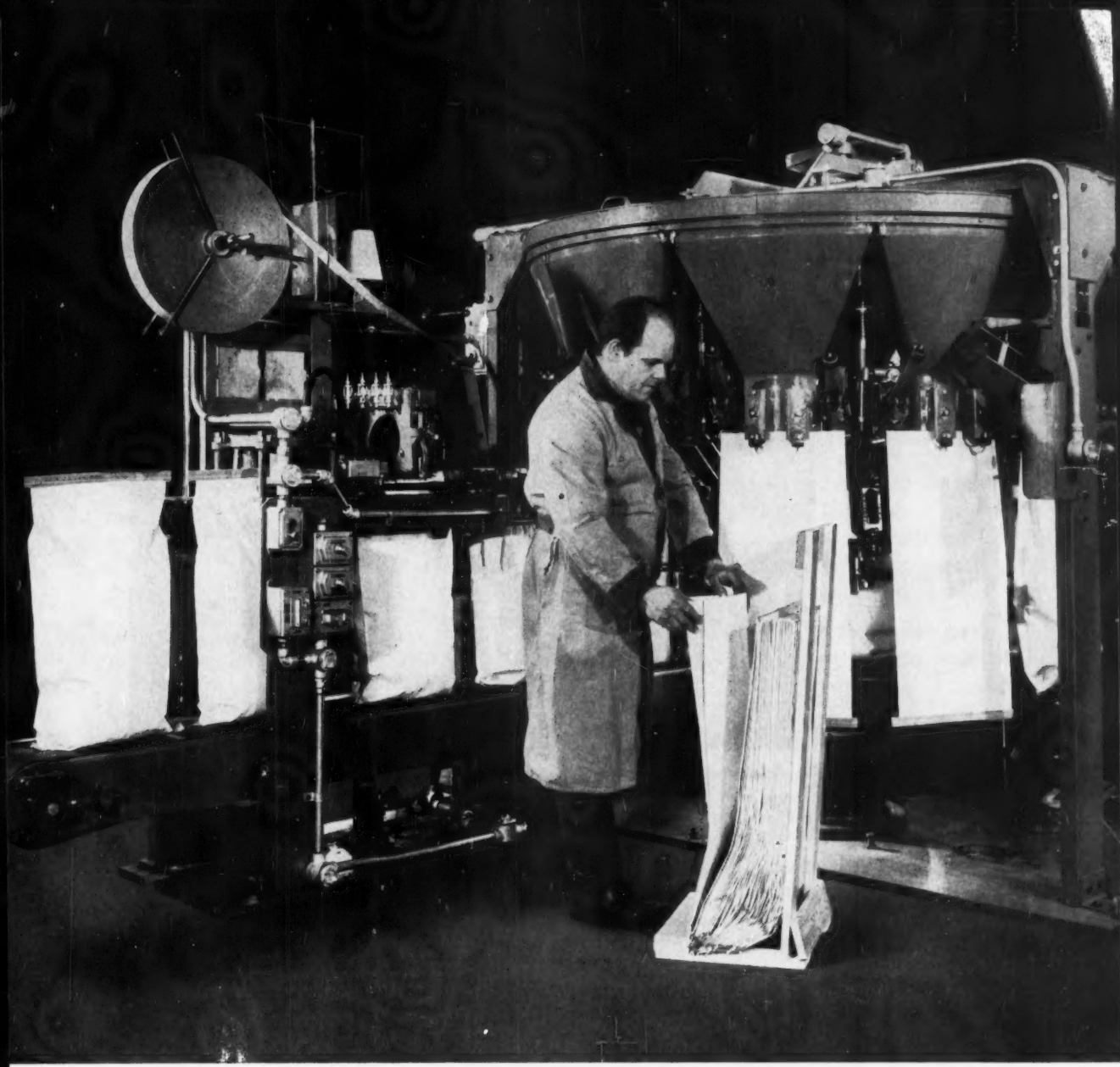
Chemical Expansion/Hungary: Hungary has revealed new chemical goals for its 1961-65 five-year plan. Included: doubling of total chemical output over the '58 level; a 400-500% increase in nitrogen fertilizer output, and a rise in superphosphate production from 200,000 to 650,000 tons/year. Annual output of coking coal is slated to rise 91%, to 640,000 tons.

•

Exports/West Germany: Germany's chemical foreign trade volume rose 14% in the first half of '59. Exports totaled $605 million; imports, $224 million. In trade with the U.S., exports totaled $32.1 million, compared with $25 million in first-half '58; and imports totaled $52.4 million.

•

Rubber Chemicals/India: Alkali & Chemicals Corp., an Imperial Chemical Industries subsidiary, is building a $4.2-million rubber chemicals plant in Rishra, West Bengal.



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Bagpak Division **INTERNATIONAL PAPER** New York 17, N. Y.

arco APPLIED RADIATION news

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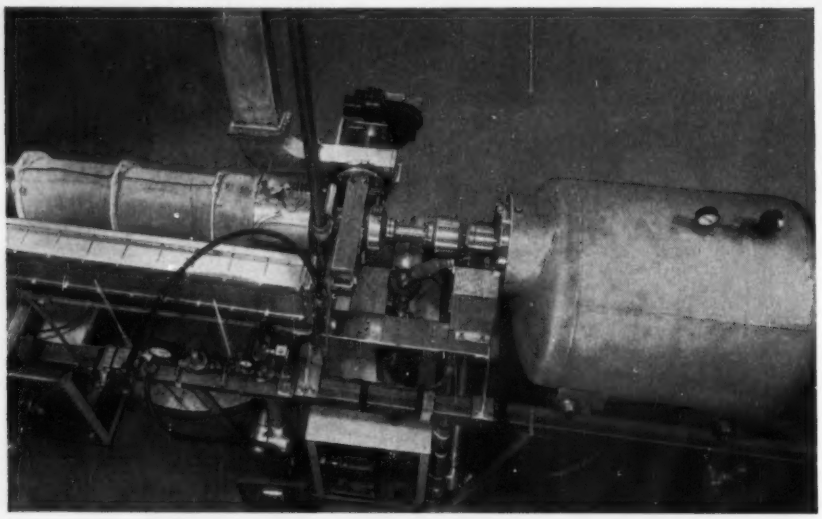
High beam power at 10 Mev and beyond from ARCO L-band Linac



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Washington
Newsletter

CHEMICAL WEEK
October 17, 1959

Management of military development and production is being streamlined—notably in space and missile projects. Objective is to clarify lines of authority, cut lead times on development (*see also p. 77*).

Most important move: removal of the Defense Dept.'s Advanced Research Projects Agency from the chain of command over military space projects.

ARPA will stay in business, limited to "advanced research" in materials, solid-propellent rockets, and other fields in which the services are doing little, if any, research.

The Air Force gets full control for development of the Midas early-warning and Samos reconnaissance satellites. It will soon get full control over development, production and launching of all rocket boosters for military space (including, no doubt, the Army's Saturn project to develop 1.5 million lbs. of thrust with clustered rocket engines).

The Navy gets control over development of the Transit navigation satellite, the Army over the Notus satellite-borne communications system. But both services will have to turn to the Air Force to launch their specially designed satellites.

Other organizational changes:

• The Air Force's Research & Development Command is being overhauled. Purpose is to pull back some management responsibilities from industrial contractors and to build up as much "in-house" capabilities as possible within the Air Force itself.

• The Navy's Bureau of Aeronautics and Bureau of Ordnance are being merged into a new Bureau of Naval Weapons. Result will be stronger centralization of Navy procurement and development. The new bureau will have a unit to oversee naval astronautics.

•

A new report by the Labor Dept.'s Bureau of Employment Security contains the first official analysis of manpower in missiles and aircraft production as of Oct. '58. It's based on a survey of "major" plants producing missiles and missile components.

But the survey is obviously a limited one. It reports only four plants in "chemicals and allied products" engaged in missile production, with total work force of 27,000. Four other plants, employing 13,000, are listed under a vague category, "rubber products and other professional service agencies and institutions." Total missile employment is reported to be 320,000.

•

Pharmaceuticals Inc. got caught up in the TV quiz probe conducted by a House committee via its sponsorship of the show "21." Edward Kletter, director of advertising, testified that Pharmaceuticals (which makes

Geritol, Sominex, Williams shaving products) had no knowledge of the alleged rigging of the show.

The committee asked Kletter to submit sales records for the two years the show was on the air. They are pursuing a rather tenuous question of whether fraudulent shows constitute "unfair trade in advertising practices."

Pharmaceuticals, which does a $25-million/year business, invested $3.5 million in "21" between Oct. '56 and Oct. '58, when it was dropped. The company had given verbal approval to a $5,000 advance to Charles Van Doren at a time when his winnings were $20,000 and he could still have lost it all. Pharmaceuticals did not investigate because producers Barry and Enright would have been stuck for the $5,000 bill anyway had Van Doren lost, Kletter said.

•

An advance look at the probable GOP platform for '60 can be gained from the party's four-part "look at the future" report. The report, prepared by party thinkers under the leadership of Bell & Howell Co. President Charles Percy, tries to spell out what the GOP should stand for in the next two decades.

In general, it pictures a party committed to progress through private enterprise, with government participation where necessary.

The latest section, on economic growth, is perhaps the most significant to the chemical process industries. Its recommendations include:

- Credit. Tight money to combat inflation is defended.
- Taxes. Debt reduction comes first, then income tax cuts in all brackets and a moderate easing in corporate rates.
- Depreciation. Faster write-offs are favored where necessary to keep up with technological change.
- Overseas investment. Tax incentives should be offered.
- Electric power. Tripling of capacity is needed, but should be left mainly to private enterprise, including building of atomic power plants.

•

Democrats propose an agency to solve technical peace problems such as setting up detection systems for disarmament. The proposal was made by the Democratic Advisory Committee's science group. It is one answer to the GOP's statement of principles for the future, and could become a plank in the Democrats' '60 platform.

The agency, related to, but detached from, the State Dept., would be a sort of laboratory in which top scientists could labor for peace. Going beyond disarmament, it might tackle such technical problems as how to aid underdeveloped countries.

The proposal came originally from four scientists known as the Pasadena group, which includes Nobel Prizewinners Polykarp Kusch and Harold Urey.

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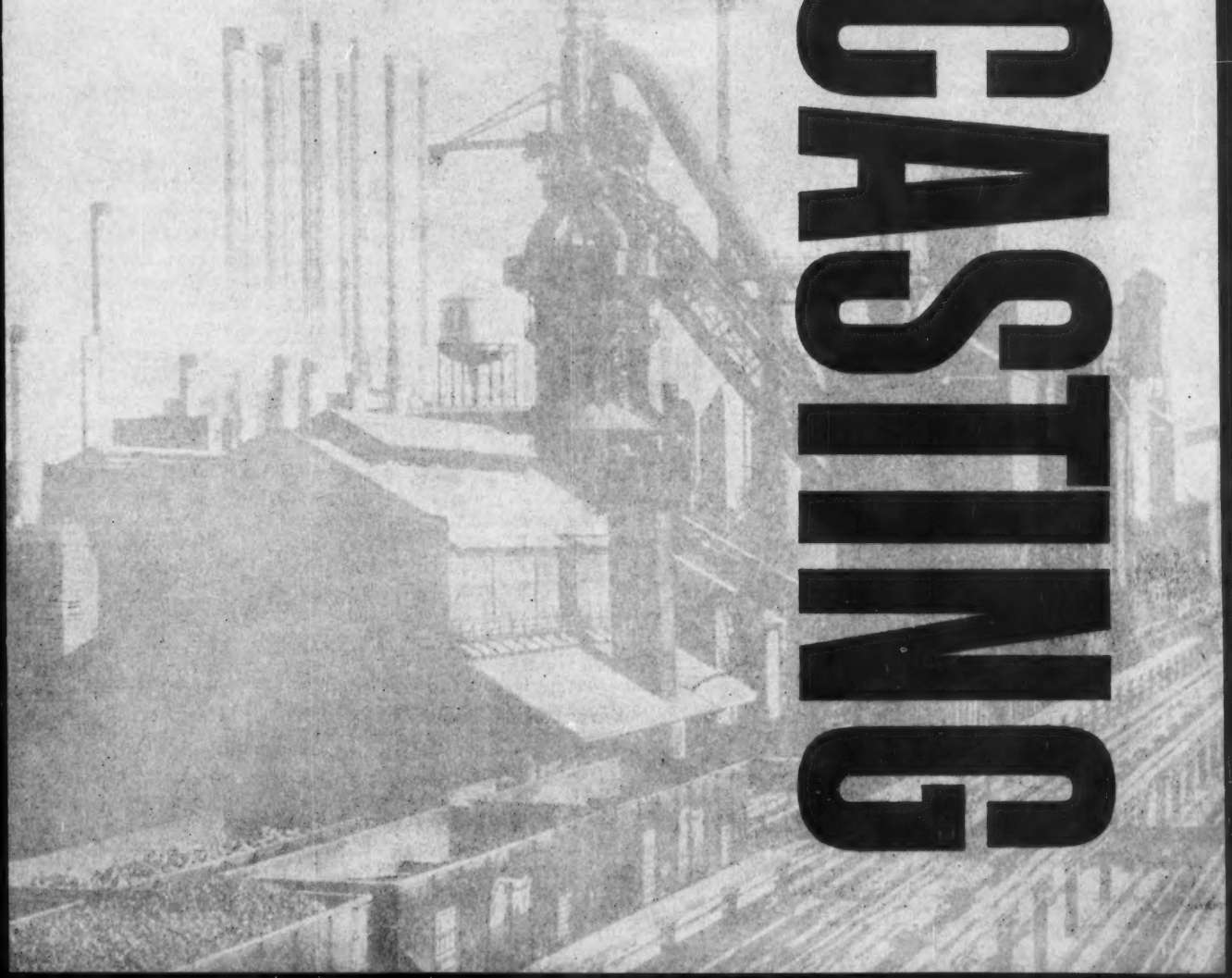

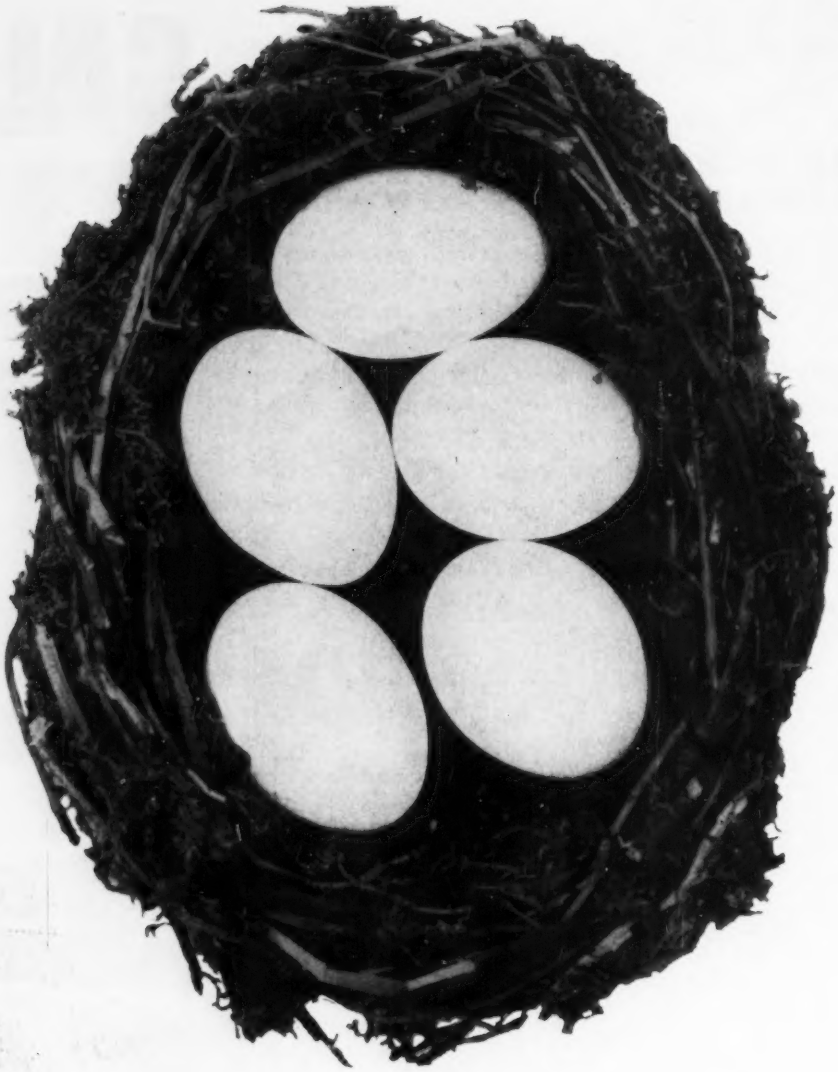

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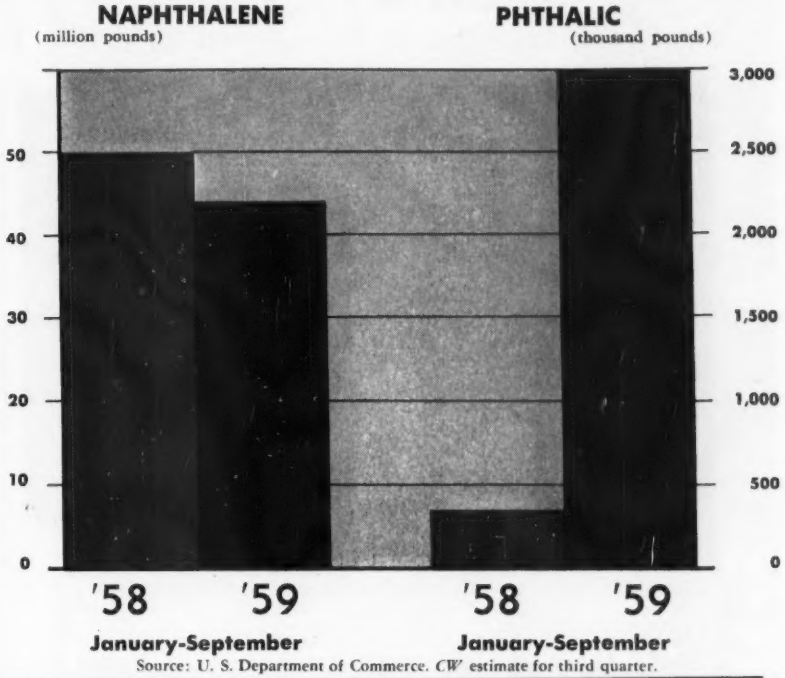
Declining naphthalene imports spur influx of foreign phthalic anhydride



Source: U. S. Department of Commerce. *CW* estimate for third quarter.

Imports, an increasingly important factor in U.S. chemical markets, have taken on new significance as a result of the steel and dock labor disputes. Here's the record and outlook on coal chemicals, a key segment of the chemical import picture.

Behind Coal Chemicals' Import Muddle

Chemical imports have suddenly assumed new importance: U. S. chemical process industries' supplies of coke chemicals were virtually choked off by the steel strike (CW, Sept. 5, p. 47). Then the slender import lifeline was threatened by the sudden dock strike.

What effect have foreign-produced coke chemicals had upon the U.S. chemical industry in '59? What will be their place in '60? These are crucial questions the chemical industry's purchasing agents are pondering this week, as they stare at near-exhausted inventories. And, as they evaluate their raw-material requirements for the rest of '59 and most of '60, there is no doubt that foreign-made materials will be an important means of filling their bins.

Naphthalene is—and will long continue to be—the outstanding problem chemical. In first-half '59, naphthalene imports amounted to only 33 million lbs. And third-quarter shipments—showing slight improvement—will boost this total by 10-15 million lbs. The '59 record so far (43-48 million lbs.) compares with a total of 81 million lbs. of naphthalene imported in '58—a quantity well within the "normal" annual import range of 75-100 million lbs.

Because of the naphthalene shortage, U.S. buyers started searching Europe for phthalic anhydride. In first-half '59, 1.1 million lbs. of phthalic were imported—more than three times the 343,000-lbs. total for all of '58—an unusual situation for the U.S., traditionally a large exporter of this chemical.

Cresols and cresylic acid imports are also up. During the first half of this year, 1.1 million gal. came into the U.S.; that's almost equivalent to the yearly total for '58. However, U.S. suppliers report they still have satisfactory inventories.

Benzene is another chemical that is becoming scarcer by the day, although imports have been running slightly higher than in '58. In first-half '59, about 26 million gal. were imported; this compares with 44.5 million gal. during all of '58.

Pyridine imports have also topped the '58 figure; the first-half '59 total was 101,665 gal., compared with 87,899 gal. in '58. However, this increase is not tied as directly to the steel strike as other imported chemicals because synthetic pyridine is being made in shortage-easing quantities by Reilly Tar & Chemical. The important factor in the pyridine picture is low duty, which permits foreign material to be sold in the U.S. at lower than domestic prices.

Some increase in imports of coal-tar dyes and colors is also attributable to low duties.

Major concern obviously centers on naphthalene and phthalic anhydride supplies, which were most seriously affected by the steel strike—a shortage compounded by growing worldwide demands for phthalic anhydride. Europe's CPI constantly needs more phthalic, as does South America (notably Brazil), Australia and especially Japan.

Japan's increasing demands for phthalic anhydride helped lure Euro-

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pean naphthalene away from U.S. shores. Germany, for example, reportedly contracted to supply Japan with 15-20,000 metric tons of naphthalene in '59.

(A curious sidelight to the present U.S. shortage was the importation of about 1,000 lbs. of naphthalene from Japan during the last two months. But this is an unusual situation, and very little more naphthalene should be coming from Japan, since Japanese demands for it are still not completely satisfied.)

Italy is another large-volume user of naphthalene. The country's coking operations are not adequately large to satisfy the nation's substantial phthalic anhydride requirements. Consequently, Italy has entered into a reciprocal trade agreement with Russia. The Soviets will supply naphthalene, in return receive phthalic from Italy. Despite this Italo-Russian exchange, Italy is shipping large quantities of phthalic to the U.S. during the current shortage. Incidentally, current cost of imported phthalic is in the 27-30¢/lb. range; this compares with a 17¢/lb. tab for U.S.-made phthalic.

Naphthalene and phthalic anhydride are still coming into this country from Germany, but at a slower rate than in '58. One factor that has hampered production of naphthalene in Germany: large inventories of coke, which forced a cutback in coking operations. But these coke stocks have been pared, and coking operations are now being stepped up.

England, another large supplier of coal chemicals, was also short on naphthalene—at least for export. First, unseasonably warm weather reduced the demand for heating gas, which is made from coal. This meant a reduction in coking operations, and a subsequent dropoff in recoverable naphthalene. At the same time, Imperial Chemical Industries' phthalic plant—long plagued with startup difficulties—was finally put into operation. The result: increased British requirements for naphthalene reduced the amount available for export.

And behind the Iron Curtain, a new phthalic plant was started up earlier this year. The new unit is located adjacent to the Solventul factory in Rumania.

The rapidly growing demand for phthalic in Argentina has prompted

ICI to undertake a new plant there. The site of the unit will be on the Parana River at San Lorenzo, Santa Fe, about 200 miles north of Buenos Aires.

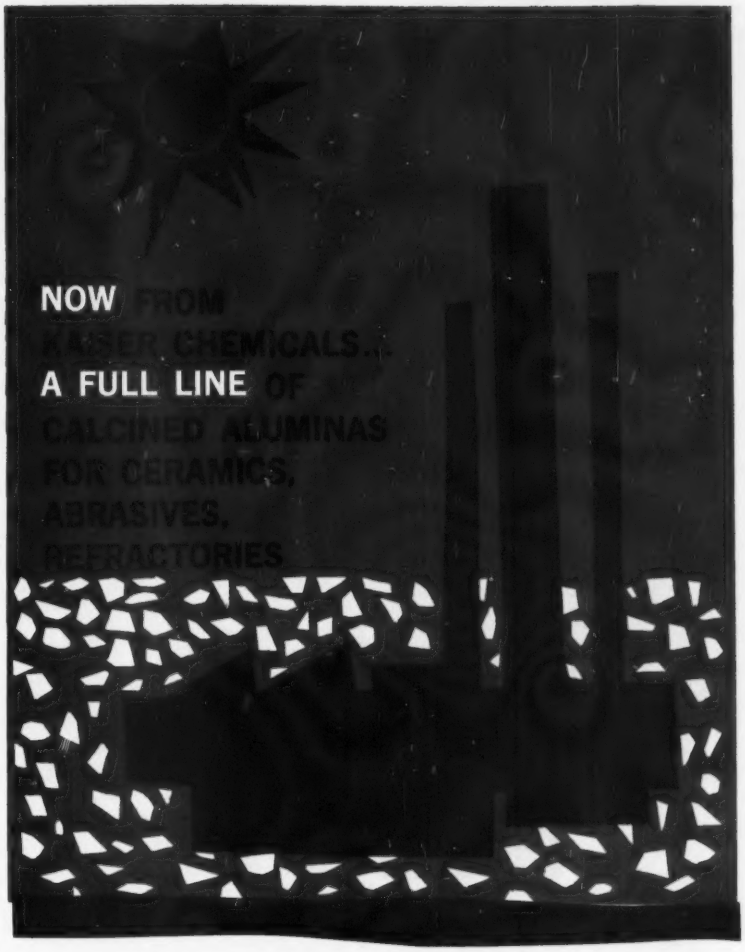
Until final settlement of the steel strike, demands for foreign-made naphthalene and phthalic will obviously be strong. But even after the strike is settled, most CPI purchasing agents will continue combing Europe for these raw materials.

Under "normal" conditions, U.S. suppliers have enough naphthalene to satisfy domestic needs. But the long steel deadlock reduced inventories of both naphthalene and phthalic to dangerously low levels. During the six to 12 months following the settlement of the steel strike, every coke-chemicals producer will be working to restore inventories as quickly as possible. Moreover, hectic inventory buildup will likely extend right down to the consumer level, putting very heavy demands on naphthalene and phthalic suppliers. Quite likely, though, most of the material imported will be naphthalene, rather than phthalic.

All signs seem to indicate that naphthalene tabs will be higher after a steel settlement. Foreign producers have been unhappy with the 5¢/lb. price. And with greater world demands for phthalic offering more outlets for naphthalene, importers will be demanding premium prices, which may be in the 5-6¢/lb. range. (Even at a foreign quote of 5¢/lb., the domestic buyer is still paying a premium, since he has other expenses that must be added into this figure—e.g., debagging costs, evaporation losses in ocean shipping.)

Although a quick recovery by domestic coal chemical producers would restore the normal price differential between foreign and domestic material, contract prices will be negotiated later this month, during a time of scarcity. Thus, it is believed, most importers will continue to seek a premium price for next year's contracts.

How much foreign-made naphthalene will be available for import to the U.S. is still moot. Contracts for next year won't be drawn up until later this month. But best guess now is that imports of naphthalene during '60 will still be in the 75-100 million lbs. range.



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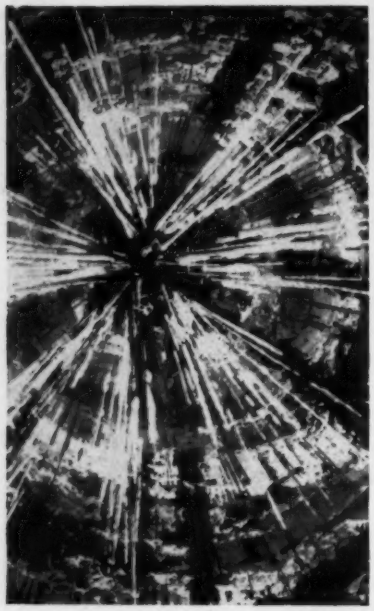

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Cuba Curbs Cosmetics

Export of U.S. cosmetics and toilet goods to Cuba will be hard hit by Fidel Castro's new curbs on Cuban imports. His latest move will virtually shut out all U.S. exports of these products to Cuba next year.

The tightest Cuban restriction is a new surtax law applicable to exchange payments on luxury and semiluxury goods. To avoid prohibitions against discriminatory tariff rates under the General Agreement on Tariffs and Trade (GATT), the law was drafted to apply to exchange payments, and is not a direct import tariff on duty.

The surtax law contains five categories of goods, with tax rates ranging from 30 to 100%. In the 40% surcharge category are nearly all toilet articles and prepared cosmetics, and even medicinal cosmetics intended for the hair, skin and teeth. The specific products effected include "beautifying preparations" for the hair, skin and teeth, plus deodorants, shaving creams, sun-tan lotions or creams, and perfumed soap products.

Atop the Surtax: Besides creating the surtax, Castro has also upped the sales tax rate—to about 10-15%—on a variety of consumer goods, including cosmetics. And the Cuban government is now negotiating to impose direct higher tariffs on goods from the U.S., again including cosmetics and toilet goods.

Major purpose of these moves is twofold: (1) to shut off all luxury or other-than-basic consumer goods imports, thereby reduce the drain on Cuba's shaky foreign exchange balance; (2) to stimulate domestic production of many of these products by restricting foreign materials from entering the country.

Glycerine Return: But cutting down cosmetics imports may not be the hoped-for boon to Cuba's currency problem. Several major U.S. makers of toiletries are also large buyers and consumers of an important Cuban export, glycerine. In '58, about 3.5 million lbs. of crude glycerine were exported from Cuba to the U.S.

Although Castro continues to cry that he would welcome foreign production of goods in Cuba, his attitude toward foreign investment—the threat of nationalization—makes such ventures highly speculative.

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(phenyl carbethoxy pyrazolon)
5 OXO-1-(P-SULFO PHENYL)-2-PYRAZOLINE-3-CARBOXYLIC ACID
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3 METHYL-1-(4 SULFO PHENYL)-5-PYRAZOLON
3 METHYL-1-(2.5-DICHLORO-SULFONILIC)-5-PYRAZOLON
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3 METHYL-1-(4-TOLUENE SULFONIC)-5-PYRAZOLON
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* *plus the well-known specialty products of*
BAYER LEVERKUSEN • CASSELLA MAINKUR

before
you
commit
yourself
to a
stereospecific
catalyst
investigate

new Lithium Butyl

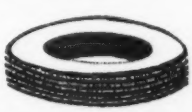
1. First off, lithium butyl is not new. What *is* new is its commercial availability in a solvent rather than an ether vehicle. Highly stable, it can be stored at room temperature for indefinite periods without deterioration. And you can handle it just as freely under nitrogen as under argon or helium.

2. Lithium butyl is a single component catalyst of known composition with homogeneous reaction mechanism. Compared with conventional heterogeneous catalysts of uncertain composition, lithium butyl permits more accurate predictions of final polymer performance . . . makes controls easier to establish and hold.

3. The amount of lithium derived catalyst required in ordered isoprene polymerization is extremely small. Possibly less than 0.01% of the isoprene. And the amount of the catalyst remaining in the polymer is even smaller . . . of the order of parts per million. Thus, despite its relatively high price, lithium contributes very little to the *cost* of the product. It may actually reduce the cost by permitting economical simplification of post polymerization treatment of the polymer.

4. Little definitive information has been published as to the merits of various catalyst systems in natural rubber synthesis. Both Ziegler and lithium catalyzed rubber show approximately the same percentage of *cis*-1,4 isomer. But there is one product difference. Lithium catalyzed polyisoprene has a higher molecular weight than either Ziegler types or natural hevea rubber. Ultimately, the efficiency of the catalyst may depend more on the purity of the monomer than on any other single factor.

5. Participants in the 1958 Gordon Research Conference on polymers clearly stated the need for efficient, soluble, stereospecific catalysts in large quantities. Lithium butyl satisfies all of these needs.



6. Lithium butyl has been suggested as a substitute for aluminum alkyls in Ziegler type catalysts. An excellent yield of *cis*-1,4 polybutadiene has been reported as resulting from such a substitution.

7. The commercial future of Foote's new lithium butyl preparation seems assured. Its potential in ordered polymerization has been established. And numerous research projects are focusing on it as an intermediate. If you'd like to renew your acquaintance with lithium butyl, just return the coupon, checking your specific interest.

FOOTE
MINERAL COMPANY

FOOTE MINERAL COMPANY
420 Eighteen West Chelten Bldg.
Philadelphia 44, Pennsylvania

Gentlemen: Please send me the following checked monographs:

- ☐ #100—Catalytic Lithium
- ☐ #101—Lithium in Organic Chemistry
- ☐ #103—Lithium Butyl
- ☐ #104—Catalytic Lithium in Polymerization

Plus information on ☐ sample quantities ☐ commercial quantities

Name_____

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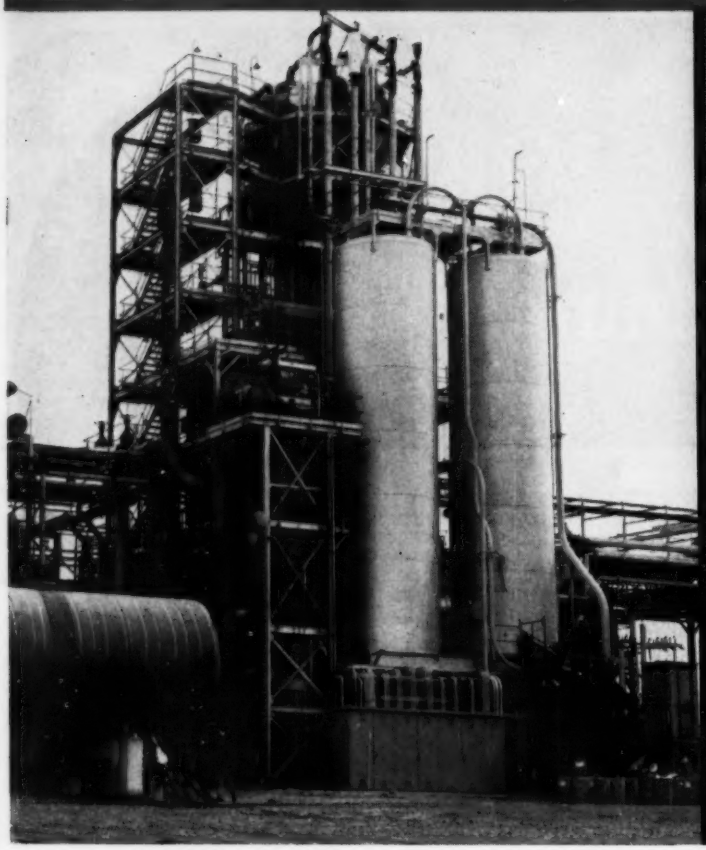
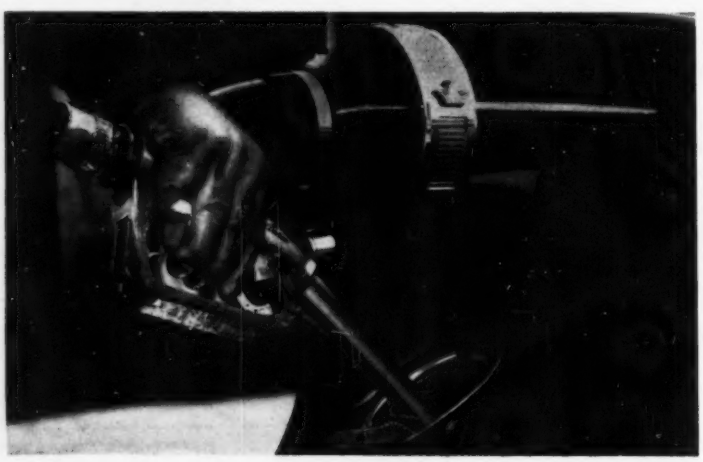
Address_____

CYANAMID

Chemical Newsfront



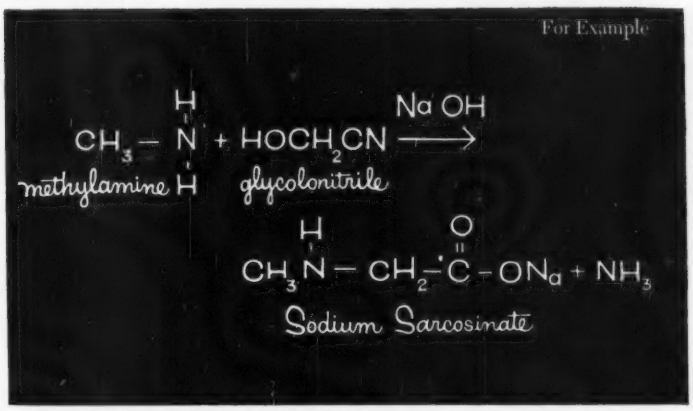
NEW PROCESS IMPROVES PURITY OF PHTHALIC ANHYDRIDE. Over ten years of Cyanamid research and development results in an improved method of manufacturing phthalic anhydride. In operation at Cyanamid's Bridgeville, Pennsylvania plant, the new process involves catalytic oxidation of naphthalene in fluid bed converters—results in greater purity. Similar improvements currently in progress will expand Cyanamid's maleic anhydride capacity at Bridgeville from 14 million pounds annually to 20 million pounds. These developments will enable Cyanamid to meet the increasing needs of the many users of both phthalic and maleic anhydride. (Plastics and Resins Division)



DYE-DUSTING PROBLEMS END FOR GASOLINE REFINERS using Cyanamid's CALCOGAS ROCKET RED. Superior to powdered oil reds, this new red dye eliminates dusting problems in storage and handling. Non-dusting, non-caking and extremely soluble, its granulated form facilitates use in automatic metering and mixing equipment. Because of its non-caking properties, Calcogas Rocket Red resists physical change even at the high temperatures often found in refinery storage areas. In addition to the new Rocket Red Calcogas, Cyanamid also manufactures and sells other exceptionally soluble, dustless colors to the petroleum industry such as Calcogas Orange NC and Calcogas Yellow NC. (Dyes Department)

NEW PAPER INSULATION UPS PEAK TRANSFORMER LOAD CAPABILITY 20%. Cyanamid's ACRYLONITRILE has helped General Electric Co. develop a new paper for the insulation system of its pole-type distribution transformers. Paper manufacturer Hollingsworth & Vose Co. produces the new insulating paper for G.E. from kraft pulp chemically treated with acrylonitrile. In a process known as cyanoethylation, acrylonitrile is added to the pulp to modify its chemical structure and greatly strengthen heat-resistance and retention of dielectric and tensile strength properties. Pulp treated with acrylonitrile also results in substantially improved dimensional stability—important for applications such as map paper and business machine punch cards.
(Petrochemicals Department)

TEXTILES STAY CLEANER . . . WON'T CLING when treated with Cyanamid's CATANAC® *SN Anti-static Agent.* A small amount of Catanac SN in relation to the weight of the material is usually sufficient for complete control of annoying static electricity. Catanac SN is effective on all fibers, including the synthetics. Application may be made by brush, pad, or spray and, on washable items, by addition to the rinse water. Catanac SN has proved a boon to many industries as well as to the consumer. When used in textile coning oils, for example, it is beneficial in keeping the lubricated material static-free during processing. **(Market Development Department)**



A BETTER WAY TO MAKE α-AMINO ACIDS. The availability of Cyanamid's AERO Glycolonitrile has made possible the use of an easier and better method for producing α-amino acids. This process is based on the condensation of glycolonitrile with ammonia or amines, followed by hydrolysis of the resulting aminonitrile. By combining hydrogen cyanide with formaldehyde to form glycolonitrile, Cyanamid has greatly reduced the hazards and difficulties encountered in using free hydrogen cyanide. The glycolonitrile route to α-amino acids can result in economic advantages. **(Process Chemicals Department)**

For further information on products in this advertisement wire, phone — or mail this coupon to:

AMERICAN CYANAMID COMPANY
30 Rockefeller Plaza, New York 20, N. Y.
Please send me additional information

- ☐ CALCOGAS ROCKET RED
- ☐ PHTHALIC ANHYDRIDE
- ☐ ACRYLONITRILE
- ☐ CATANAC® SN Anti-static Agent
- ☐ AERO Glycolonitrile

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Company_____

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AMERICAN CYANAMID COMPANY

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

CW PHOTOS—ED WALLOWITCH

Products backed by national advertising win counter space . . .

Trend to higher-priced products is drawing different-type customer . . .

Changing Variety-Store Counters

A glamorized version of the old-fashioned dime store was opened last week in Hempstead, N.Y., by the S. H. Kress Co., stocked with products ranging from traditional 5¢ items to latest-style shoes. In effect, it's a junior department store, and typifies the developments taking place in the variety store business, a $4-billion/year segment of retailing that has become of great importance to makers of chemical specialties.

The dime store has always been an important outlet for cosmetics (accounting, for example, for over 7% of all cosmetics sold), health and dental aids, paints, waxes, polishes, glues, dyes (15-20% move through dime stores), and other specialties. But the vast changes now occurring in the variety store field may require different "selling" methods on the part of specialties makers.

What's Happening? Variety store officials agree that their merchandising methods are changing, but they give no evidence of an awareness that the changes have somewhat confused the industries supplying them.

A major dilemma concerns basic selling policy — whether the store should continue as an outlet for inexpensive, small-size items or whether it should sell some high-priced, "prestige" goods such as department stores carry.

Costs Are Rising: Part of the confusion about high-priced-vs.-low-priced goods arises from the national trend to suburban shopping. Dime stores in suburbia feature self-service, push carts, and check-out counters. And the majority of suburban customers drive cars when they go shopping. They must be lured by specials—and that means more money for advertising. Because of rising costs, dime stores have turned to higher-priced merchandise with greater profit per unit sold.

Exceptions to the self-service trend are the S. H. Kress stores, which once converted to self-service, and now are switching back to use of sales girls because the department store type of merchandise requires personal attention from sales clerks.

What They Look For: Aside from the intrinsic worth of an item, the most important factors influencing buyers relate to price and packaging. A low price is considered most important by many chains, but they also feel that a package's visual appeal is equally important. Variety stores count a great deal on impulse buying, so they want a package that stands out. It must carry, in addition to instructions for use, its own selling message, and price should be clearly marked.

In line with the switch to self-service, dealers are interested in compactness and durability to withstand handling. A few chains insist only that merchandise be plastic covered;

Self-service shopping is now the rule in many departments . . .

Stores stock limited number of brands, mostly time-tested top sellers.

Poses New Specialties Challenges

they are most worried about protection against handling, less concerned whether a package has an eye-catching design.

The backbone of the variety stores continues to be popular-priced items. While they may offer a $25 rocking horse, they know their big sales potential does not lie in that direction. Over 50% of all variety store items are priced below $1; 80% are under $2. Some chains frankly say they are looking for items on which to make a "killing," something they can buy in quantity that has a high mark-up. Others contend that price is only one of several considerations. A firm that develops and sells higher-priced items complains that a few chains do not support pioneering products, prefer to wait until competition comes out with a cheap version. Most chains, however, appear to want to offer brand-new items. In any case, competition is fierce, and stores want merchandise that can be sold with a minimum of customer resistance.

Ads Help: It's much easier to sell to variety stores if a product is backed by national advertising. Although the chains deny this, all of the specialty companies *CW* surveyed stressed this angle.

"That's the first thing they ask," said the head of a toiletries company's department that sells to variety stores. "A small company trying to get into the market doesn't have much chance without advertising, unless it has a novelty item."

Most variety stores would probably like to get away from the small-size package, which was traditionally made especially for their use. But they find that customer demand still exists. As a result, they frequently seesaw between dropping, say, a 15¢-size toothpaste, and then demanding it again.

The product type makes all the difference in breaking into this market. In a field such as toiletries, each chain carries many brands, and new ones are frequently added. But in the case of household dyes, paints, glues, to name a few products, stores stock just two or three brands, and it is almost impossible to interest them in a new line.

Loyalty Good: It is generally agreed that once a variety store accepts a company's product, it will stick with that supplier. Loyalties are said to be much stronger here than in the drug and food fields.

But some specialties makers feel that nowadays, when much reordering is done according to IBM systems, the supplier-buyer ties are becoming more impersonal. Buyer loyalty can be a help or a hindrance, of course, depending on whether a company is an established supplier or is trying to break in with a new item.

Some Case Histories: Here are a few experiences of specialties com-

DANGERS of launching a NEW PRODUCT

Snell Research can help overcome them

Here's how, in some typical case histories of Snell clients:

Product Research and Development—A few years ago Snell was retained to develop new products, applications, and markets for sugar. Extensive research and development work by Snell resulted in the creation of a new synthetic detergent—based on *sugar!*

Product Application—A Snell client in the paper industry, for whom we had developed a fine additive, wanted to explore uses in other fields. Unfortunately, their highly qualified staff's experience was limited to the one field. Snell, with experts in practically every product field, found the new product has potentialities as both a good emulsifier and a paint plasticizer. Only the very largest manufacturing companies can duplicate the breadth of experience and background the Snell "brain-trust" of technical experts can offer you!

Product Improvement—One Snell client found their product, an adhesive bandage, slipping in quality. Tape was going gooey in storage on druggists' shelves. Snell research helped this client bring his product quality up to equal the best on the market, and retain his share of sales.

Product Evaluation—A Snell brewery client wanted to expand production and take advantage of a more efficient production technique but feared the taste of the beer might suffer. Snell food technologists, taste panels, and engineers checked the new process and hundreds of samples of beer made under new and old systems, recommended the switch to the more profitable modern process. The change went unnoticed by the customers, and sales continued to climb.

Market Research—A Snell client with a waste product had briefly considered building a plant to use it to manufacture another product; but had given up after their own brief survey showed the new product to be already overproduced. When they consulted Snell for checking, however, Snell predicted there would be a shortage within three years. The client waited two years, built the plant—and now has a profitable new product instead of a waste!

Toxicology—One of the largest frozen food companies began getting complaints on the flavor of one of their green vegetables. Since hundreds of thousands of dollars were at stake, they consulted Snell to find out what was wrong. Snell by analyzing tests, and checking on the farm, was able to prove that the taste—actually toxic—was due to a new type of insecticide sprayed on the fields hundreds of yards away on a windy day long before the harvest!

Engineering—A large midwestern firm desired to produce its own brand of instant coffee, to possess outstanding flavor, body, and bouquet. They engaged Snell to design their extraction line, which is now economically producing a superior product, and have since doubled capacity. Since that time, two additional plants have been modified under our supervision to increase production and improve product characteristics.

What's Your Product Problem?—Whatever it is, and whatever your product field—chemicals, chemical specialties, personal products, pulp and paper, protective coatings, plastics, textiles, foods, petroleum, rubber—Snell has men who "know the score" in that field, and who can work with you creatively and profitably in developing, producing, protecting, and marketing new ideas. This broad experience can be decisive in protecting not only your ideas, but also the thousands of dollars you spend developing them. And the cost of Snell service is less than you might imagine! Half the jobs we do cost less than $1000!

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panies that do business in the variety stores:

Cosmetics: "You must have a distribution force that's well trained and staffed. If you're not equipped for a specialized selling job, it would probably be best to steer clear of this market entirely."

Household Dyes: "With dyes, there are vast technical problems, and most stores are reluctant to take on new suppliers." (Two major brands, Rit and Tintex, dominate this market.)

Glues: "It's hard to sell a single item on a direct basis. How long can you talk on one product? Our solution has been to sell through an agent who represents a number of companies. In addition to being a specialist, he has personal contacts with the stores and can give packaging and merchandising ideas."

Major Chains in $4-Billion/Year Variety Store Business

Company	*Stores*
F. W. Woolworth	2,152
W. T. Grant	740
S. S. Kresge	706
J. J. Newberry	470
McCrory & McLellan	453
G. C. Murphy	415
H. L. Green	347
S. H. Kress	261
Neisner Bros.	153

Health Aids: "Product analysis is rare because they don't have the facilities for it. They rely on your formula. A variety store will set specifications only if you build a line for them."

Waxes and Polishes: "We'd like to do more business in variety stores, but, at present, terms of selling there are less satisfactory than in supermarkets. Markup in variety stores is higher."

Paints: "Most of the variety store business is done in small sizes and we do not package our most popular lines in small quantities."

The Outlook: Market possibilities in this field are great and will continue to grow. There are more than 20,000 variety stores in this country, including 12 big chains, 100 regional com-

panies and numerous independently owned stores. Each store now stocks 25,000-50,000 items (a typical grocery supermarket stocks only 6,000) and this number will substantially increase also.

In the next five years, the industry expects a 30% increase in business. Much of this will come from new stores, of course, but a great deal is expected from new merchandise, higher-quality products, and faster turnover. That's where specialties makers can score.

PRODUCTS

Rust-Inhibited Ice Melter: Walton-March (1592 Deerfield Rd., Highland Park, Ill.) has added a corrosion inhibitor to its ice-melting compound, Ice-Foe. Called Noxide, the inhibitor is the second additive to be incorporated in Ice-Foe in the last two years. Last year, Thermolyte was developed to speed melting action at temperatures as low as 59 degrees below zero, says the company.

•

Neoprene Coating: Minnesota Mining and Manufacturing Co. (St. Paul) is marketing a general-purpose, one-part neoprene-rubber-based coating called CORO-GARD 1706. It is claimed to provide chemical, abrasion, and weathering resistance, can be used on unprimed steel, aluminum, copper, galvanized steel, concrete, wood, and glass-fiber-reinforced polyester plastics. The air-cure coating is claimed to have particularly good resistance to a 20% concentration of hydrochloric and sulfuric acids, distilled and salt water, and alkalis at temperatures up to 120 F.

•

Liquid Inhibitor: O'Brien Industries, Inc. (P.O. Box 72, Caldwell, N.J.), has developed a liquid corrosion inhibitor, O'B-HIBIT-L 32, for use with muriatic, phosphoric, and other liquid acids. It's specifically designed to meet military specifications for chemical cleaning and rust removal. Recommended concentration is from 2% to 3% by volume of the concentrated acid.

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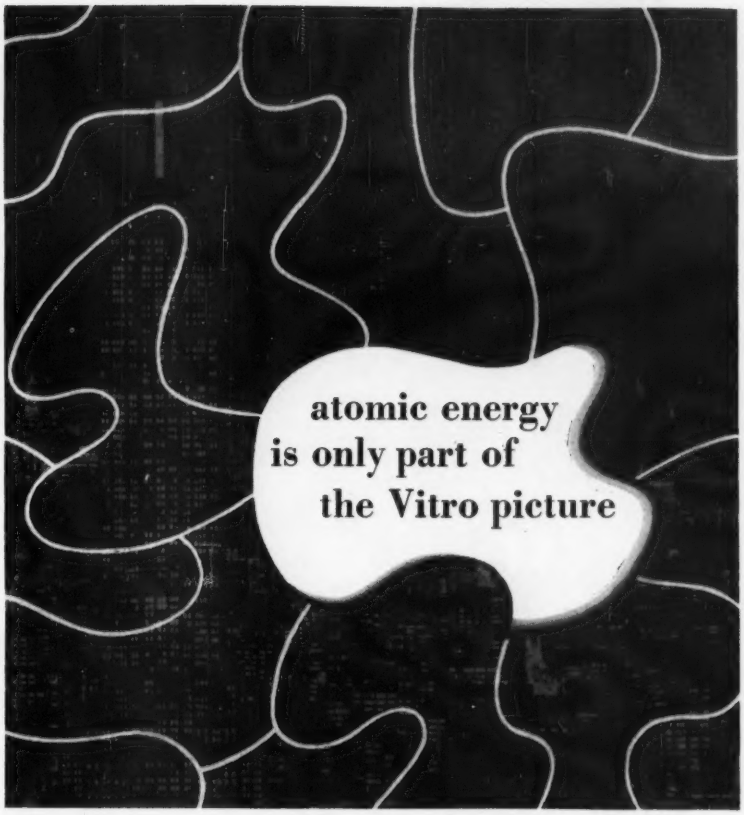
Perfumery Aid: Nerone brand of menthenyl ketone is a synthetic perfumery ingredient newly available from Givaudan-Delawanna, Inc. (New York). It's suggested for cutting the



Long known as a leading name in the nuclear industry, Vitro is made up of a group of integrated companies operating in the new technologies of the Atomic Age. It is principally in the fields of atomic energy, weapon systems, mining and extractive metallurgy.

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- *Chemical and physical research and development of processes, instruments and equipment*
- *Design, engineering and production of precision electronics, weapon systems, and air and space systems*
- *Development and operation of armament test and weapon systems facilities*

IN THE CHEMICAL AND METALLURGICAL FIELD:

- *Mining, processing, recovery of uranium, thorium and the rare earths*
- *Production and sale of ceramic colors, fine and industrial chemicals*

TECHNICAL SERVICES AND PRODUCTS COMPANIES	CHEMICAL AND METALLURGICAL COMPANIES
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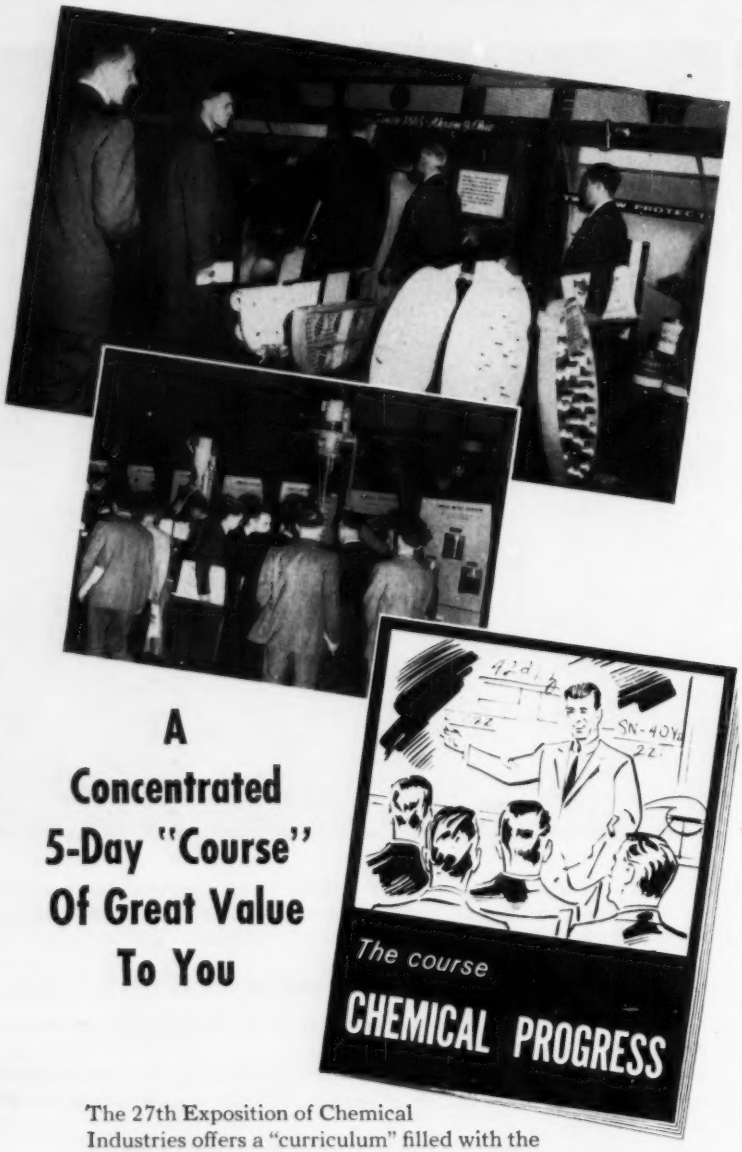

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Management: International Exposition Co., 480 Lexington Ave., New York 17, N. Y. 2202

cost of perfumes, duplicates the odor effect of the ketone portion of hard-to-get essential oils.

•

Synthetic Instrument Oil: Lehigh Chemical Co. (Chestertown, Md.) is marketing a synthetic lube for precision instruments, called Anderol L-281 Instrument Oil. A medium-viscosity diester oil, it is useful over a temperature range of —75 F to 350 F. It's compatible with ordinary lubricants and is said to have good oxidation stability. L-281 is available in pint, quart or gallon cans and in 5- or 55-gal. drums.

•

Sound-Cleaning Advice: A 12-page Ultrasonic Cleaning Primer for use as a guide by potential users of ultrasonic cleaning equipment has been issued by National Ultrasonic Corp. (111 Montgomery Ave., Irvington, N.J.).

The primer is designed to give a clearer understanding of what ultrasonic cleaning is, how it works, areas in which it can be employed, and various solvents and detergents available for use with this kind of equipment.

•

Soluble Cutting Oil: A soluble cutting oil, formulated specifically to provide maximum stability in cutting of soft alloys (aluminum, stainless steel, copper, etc.), has been developed by Shear-Speed Chemical Products (7125 East McNichols Rd., Detroit). The oil, called AL-HD, can be left in machines during shutdowns without skinning, gelation, sedimentation or sludging.

•

Aluminum-Silicon Polish: Alchemize Corp. (Congress Expressway at 624 South Kolmar Ave., Chicago) is offering a chemical polishing process that levels and brightens the surface of aluminum-silicon castings. It's called Luster Burr, is said to brighten in 10 to 90 seconds at room temperature. No electricity or heat is required with the product.

•

Roller Mill Spray: Acrolite Products (810 Martin St., Rahway, N.J.) has introduced an aerosol spray—Super Ink-O-Saver—to prevent resins, inks and varnishes from drying overnight, without harming the pigment or vehicle, and thus eliminating time-consuming press cleanup at shutdown time. Cost: $3.50/can.

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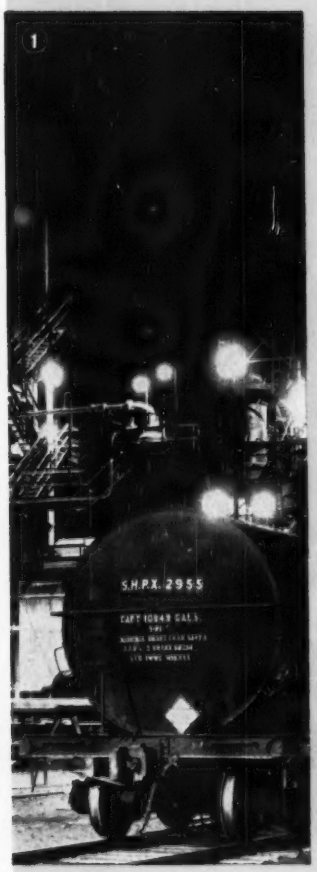
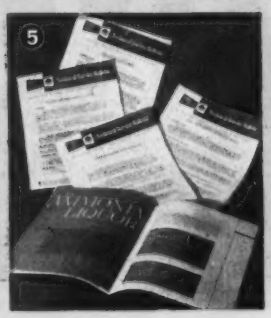
For specifications and local offices, see our insert in Chemical Materials Catalog, pages 435-442 and in Chemical Week Buyers Guide, pages 35-42.





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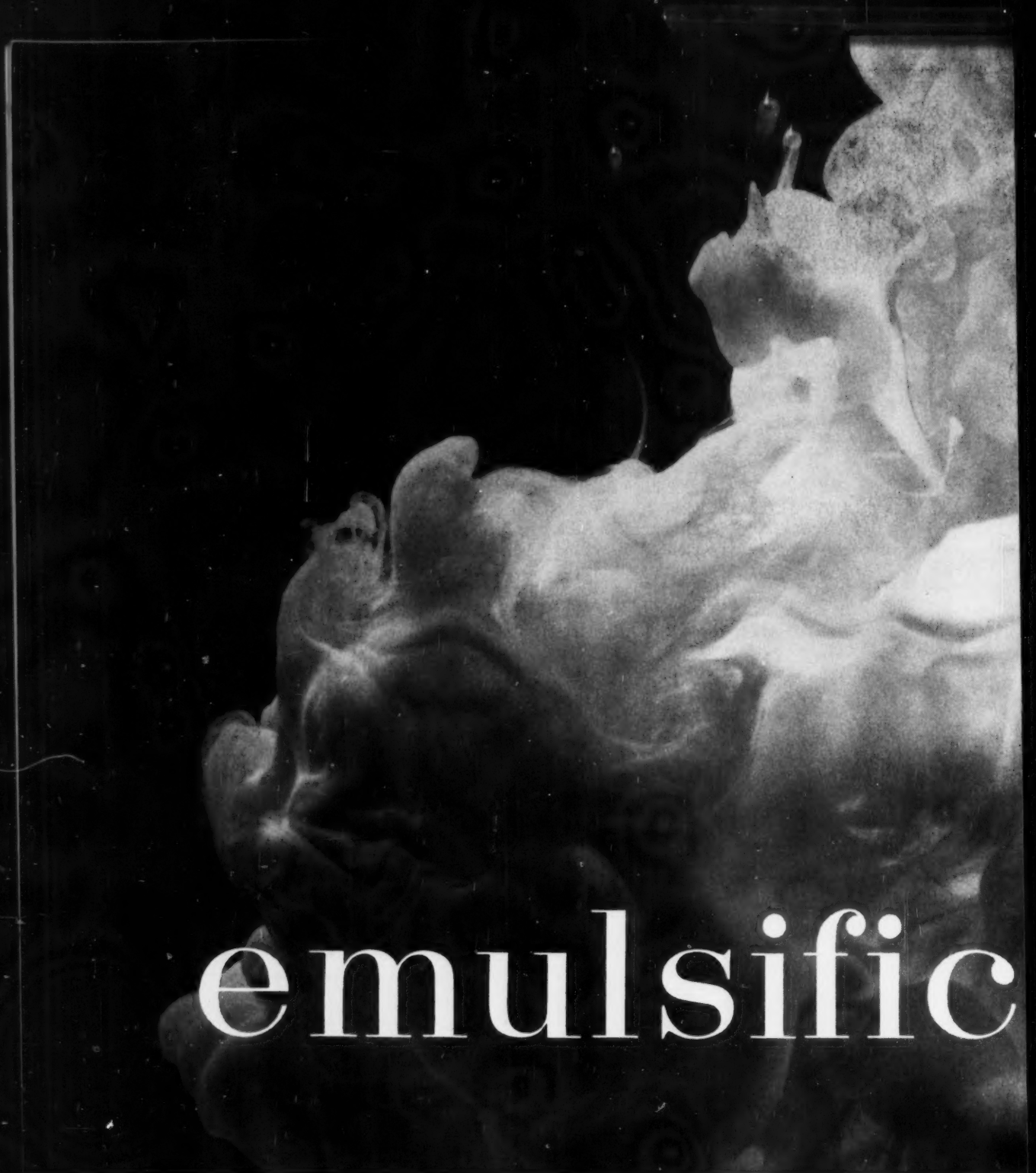

Picture shows "Bloom"—spontaneous emulsion of oil and emulsifier in water.

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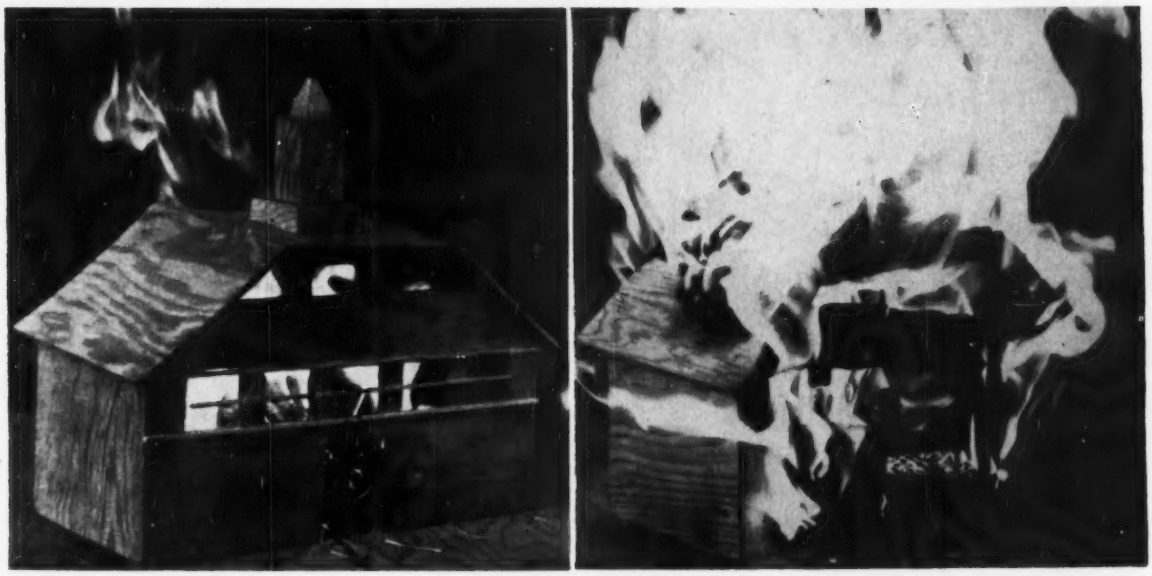
'Fireproofed' wood contains the fire . . . while untreated wood blazes.



Flammable contents of both models were ignited simultaneously to show effectiveness of treatment.

'Fireproof' Wood—Construction Cost Cutter?

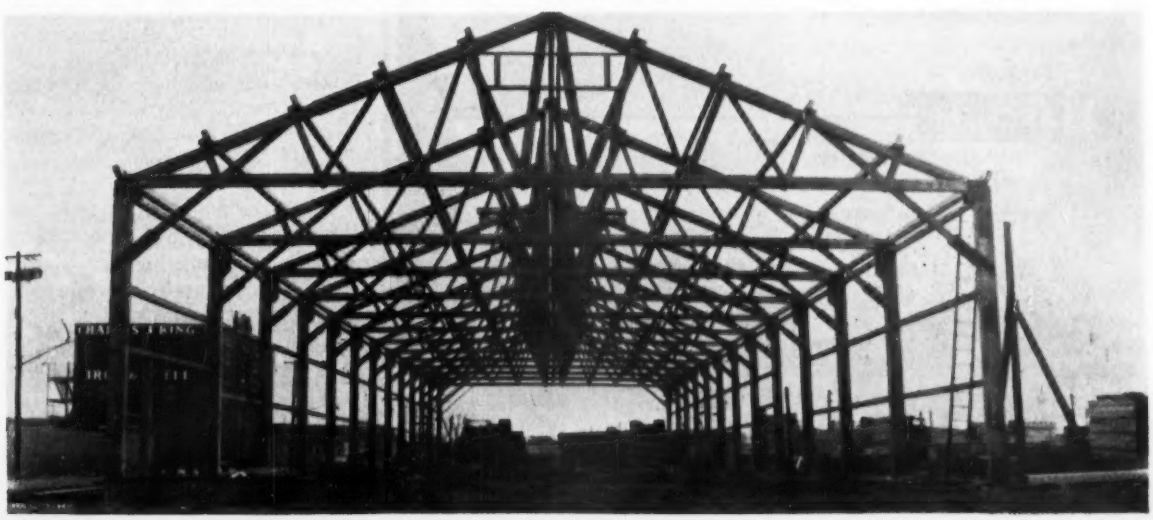
A new attitude by municipal officials and insurance companies toward wooden buildings may mean a break in construction costs and insurance rates for chemical processors throughout the country. "Fireproofed" wood, used in place of steel for the framework, is the key.

The helpful changes in city building codes are typified by New York City's new code. Well-known as the home of one of the most conservative municipal building codes in the world, New York revised its code in January to allow the use of the specially treated wood in a versatile type of commercial building (N.Y.C. Class 5). Previously, only metal construction was okayed for these structures. The first building erected under the revised code is now standing on a Brooklyn street, serving as a warehouse for Cross, Austin & Ireland Lumber Co. *(CW Technology Newsletter, Oct. 10).*

Cross, Austin is one of a number of companies that specialize in pressure-impregnation of wood. Koppers Co. (Pittsburgh)—which licenses several wood-treating processes to Cross, Austin—and Protexol Corp. (Kenilworth, N.J.) are the two major developers of processes for making wood noncombustible. Although neither process is patented, both are licensed to other wood treaters throughout the country. And both rely on a mixture of ammonium and boron compounds to render the wood noncombustible. Details of formulation, pressure, temperature and duration of treatment are trade secrets.

Plus for Builders: Although it's been long in coming, approval for the new building system seems justi-

Noncombustible wood framework for Cross, Austin building was erected by crew of carpenters.



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fied. Advantages of treated wood:

- It keeps its structural strength at temperatures that would buckle steel, thus allows greater safety, lower replacement costs. In case of a contents blaze, the building is safer than a steel one, and damaged components are inexpensive to replace.
- Cost of the wood structure—including aluminum siding and roof—is well below that of a comparable metal-frame building.
- Construction can be carried out completely by a crew of carpenters whose major equipment need be only a crane.
- Treated wood takes paints and finishes as well as untreated wood does.
- Maintenance is considerably reduced by elimination of the need for periodic repainting and replacement of either wood skeleton or aluminum siding.
- Fire-retardant treating also acts as a wood preservative.

Insurance Approval: Insurance underwriters are now convinced that the treated wood is truly noncombustible. Tests by Underwriters' Laboratories (Chicago) showed that products of both Koppers and Protexol were effective in lowering the flame spread rating of woods such as Douglas fir and Southern yellow pine to the so-called 10-25 range, depending on the length of the test period. (A rating of 25 or lower in the UL tunnel test means the product is essentially noncombustible.) As a result, the Western Actuarial Bureau (Chicago) gave its approval to the treated wood; other fire underwriters have been following suit. An example of the rates now available: on its new building, Cross, Austin is paying about 10% below the rate for a comparable steel-frame structure on the same site.

Meaning for CPI: Two obstacles have prevented use of fire-retardant wood in CPI plants: (1) building codes in some areas prohibited use of wood of any type; (2) even where allowed, treated wood was not economical because of unfavorable insurance rates.

With New York City leading the way to code changes, and with a couple of the other major standard building codes already approving the use of fire-retardant treated wood, the first hurdle appears to be tumbling fast. And the favorable rates

now offered by fire underwriters point to a solution of the insurance problem.

Treated wood may find many uses at CPI plants. It's useful for shops, storage areas, even processing area enclosures. Ready availability (sharply accentuated during a steel strike) is another plus.

High-Temperature Safety: An important reason for giving lower insurance rates to buildings made of noncombustible wood is that it is actually stronger than a steel-frame building at 1300-1700° F, temperatures often reached when contents burn.

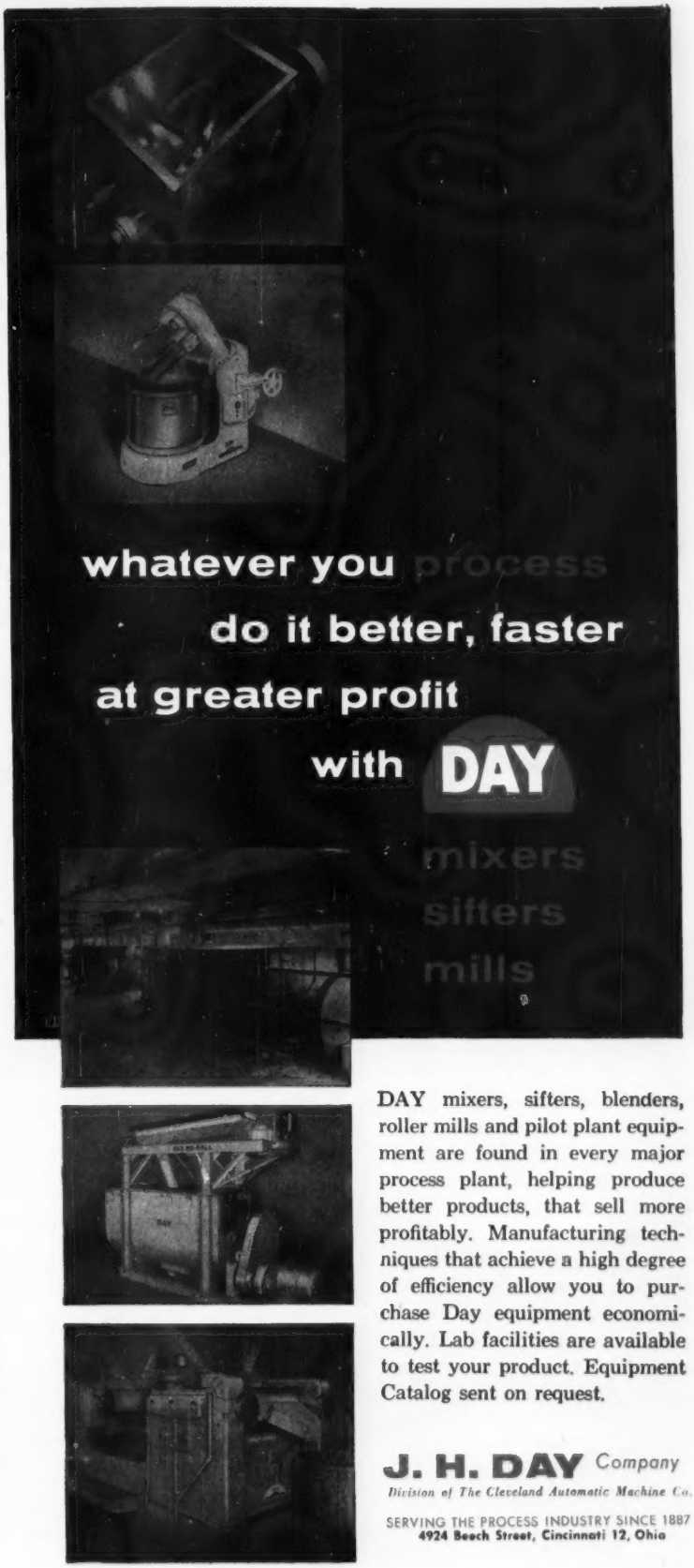
Steel loses much of its structural strength below 1000° F, may buckle. The treated wood, on the other hand, simply chars (even when exposed to direct flames for an hour) while maintaining its strength. And results of small-scale tests have been confirmed by the experience of the U.S. Navy, which used fire-retardant treated wood on a large scale during World War II.

Key to the treated wood's resistance to heat is the action of the chemical impregnants (to a depth of ¾-1 in.). The chemicals—generally ammonium sulfate and phosphate, boric acid, borax, other salts for extra preservative value—provide a variety of reactions to protect the wood from combustion. Among them: emission of nonflammable gases, fusion to form a glaze on the wood fibers, promotion of the charring of the wood (with emission of water vapor) to form a protective layer of dense, nonporous char.

Building Economy: Building costs can be pared in several ways by using the treated wood. Initial construction can be done quickly and cheaply by a team of carpenters. Estimate, based on the Cross, Austin building: 30 days' erection time; cost $2.75/sq. ft. Only difficulty in working with treated wood is that it dulls saws faster than untreated wood.

Maintenance is also less costly than for a corresponding steel structure. The aluminum exterior is available in colors and doesn't rust, while the flame-retardant treatment protects the wood from deterioration as well as from flame.

Vacuum-Pressure Treatment: The process for treating the lumber is the traditional vacuum-pressure treat-



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ment used with various preservatives. Kiln-dried lumber is placed in a vessel that is first evacuated to deaerate the wood.

Then the treating solution is piped into the vessel until it has filled all the available space. Hydraulic pressure forces more solution into the vessel and into the wood. Sufficient impregnation depends on using the right temperature and pressure (from 50-250 psi.) as well as on using the right type of wood. Woods difficult to treat include hard species (e.g., white oak, hickory) and those with high oil content (e.g., teak). Such woods, however, are less important for structural use than for decorative applications.

Promotion Under Way: Cross, Austin has already set up a subsidiary to market complete buildings using its "fireproofed" wood and Alcoa aluminum. CPI companies will be hearing more about the structural use of noncombustible wood as more building codes and underwriters give it the nod.

Ti-Cladding Proves Out

Titanium-cladding bids for use in commercial-size pressure vessels. Chicago Bridge & Iron Co. (Chicago) is now giving first details of a unit that has been in operation at a California petrochemical plant since early '59.

The unit is said to be the world's first titanium-clad pressure vessel of commercial size. Successful performance of this vessel has encouraged CB&I to offer titanium Hortonclad vessels—fabricated to order at its Birmingham, Ala., plant—on a commercial basis.

The California vessel will withstand an operating pressure of 150 psi. at 500 F, has outside dimensions of about 4 ft. in diameter, 12 ft. in height. The walls were fabricated from ½-in. mild steel plate, clad with Grade A-40 titanium measuring 5/64 in. and 7/64 in. in thickness.

CB&I has put in several years of research and development on the brazing and welding techniques needed to fabricate a successful titanium-clad vessel (*CW, April 13, '57, p. 27*). An effort of Lukens Steel (Coatesville, Pa.) aimed at the same target, but involving roll cladding, is still under development.

(Advertisement)

Unusual dibasic acid spurs research in

- **polymers**
- **polyesters**
- **epoxy, alkyd resins**

Dimer acid, in constantly increasing production by Emery Industries, Inc., is one of the most intriguing materials to come out of the fatty acid field in quite some time. Already, dimer acid has inspired over 160 use patents in the realms of resins, polymers, polyesters and other chemical intermediates. And, according to industry experts, these achievements just barely scratch the surface of the potential represented by dimer's unique structure, surprisingly low cost and ready availability.

Empol 1022 is Emery's "standard" mixture of dimer and trimer acid, approximately 3 to 1 respectively. Other proportions are available on a development basis.

Dimer acid is a *liquid*—with a high molecular weight of 578 (36 carbon atoms) as compared to other common dibasic acids. As the name indicates, trimer acid is tribasic and has a molecular weight of approximately 850 (54 carbon atoms), yet it too is a liquid.

These unusual characteristics bring many interesting applications to mind. For example, in polyesters, epoxy finishes, urethanes, elastomers, foams, alkyds and related products, the ability of dibasic acids to form polymers is of prime importance. In combination with alcohols and polyols, dimer acid produces interesting esters that may find use as plasticizers and hydraulic fluid additives. And, because dimer acid will react much the same as monobasic acids such as oleic and stearic, dimer acid also enlarges the possibilities for unique soaps, metallic soaps and condensation products.

In addition to all this creative potential of Empol 1022, its tankcar price of 26c offers strong commercial inducements in comparison with other relatively expensive dibasic acids.

Emery Industries will gladly furnish samples on request. And, for additional information, you can write for the Emeryfacts titled "Empol 1022" and Technical Bulletin #412 containing abstracts of use patents. Write Emery Industries, Dept. I-9 Carew Tower, Cincinnati 2, Ohio.

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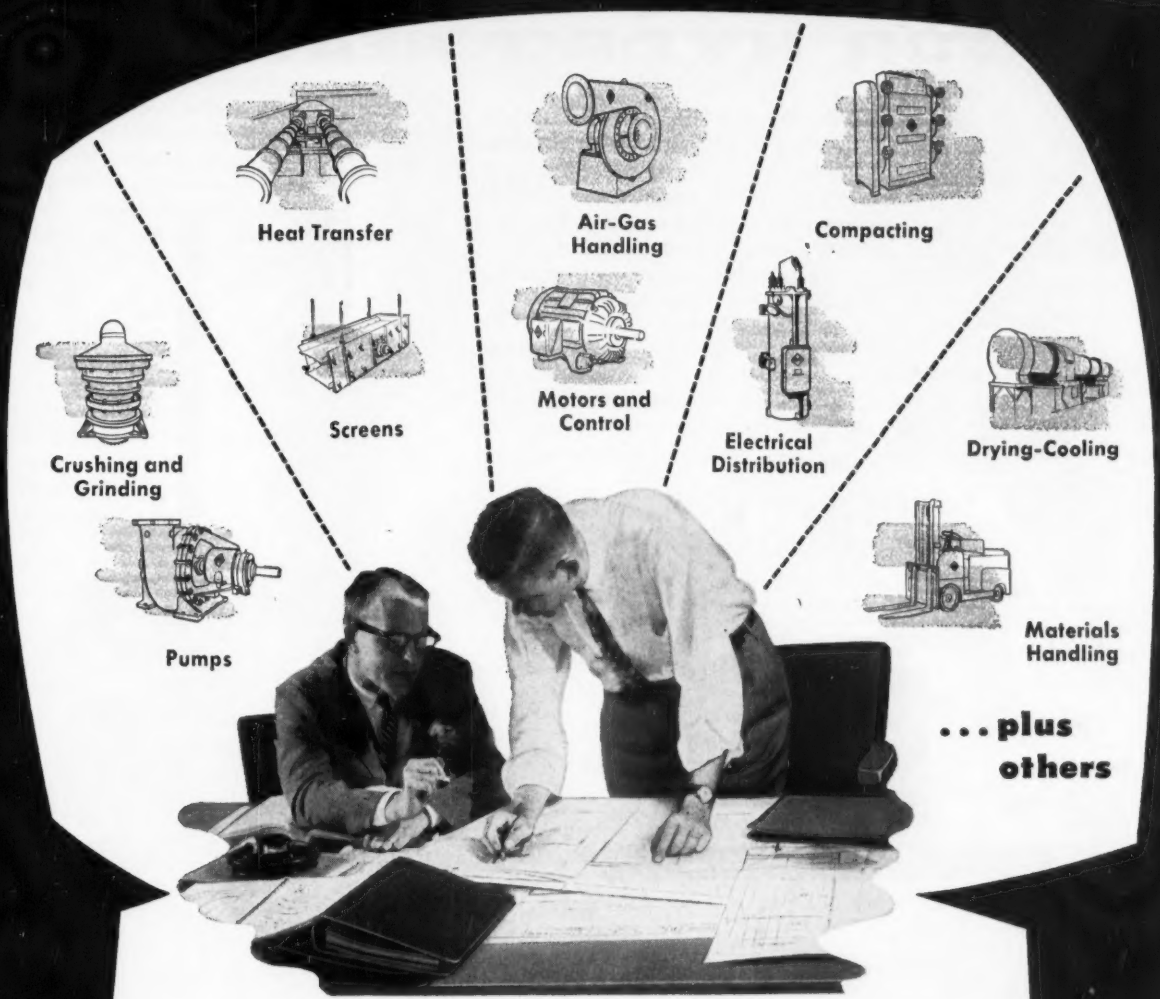

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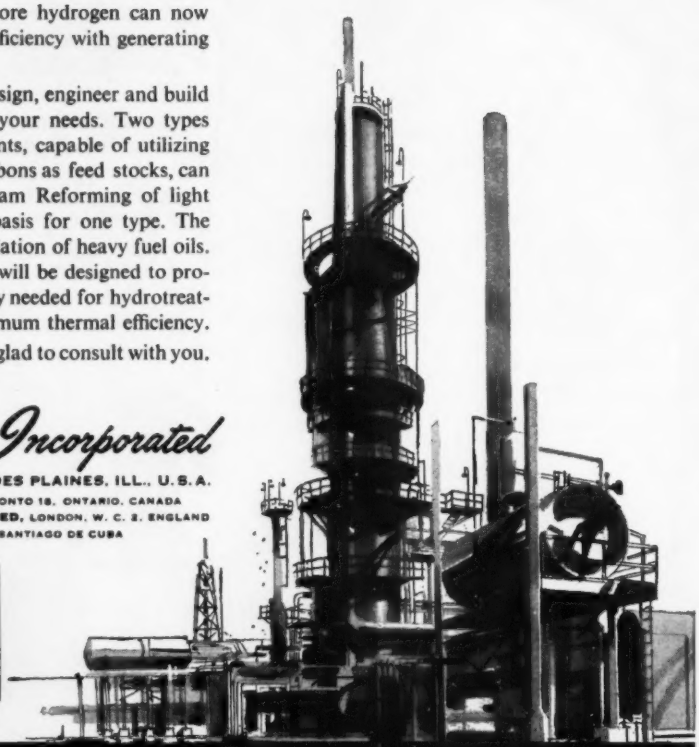

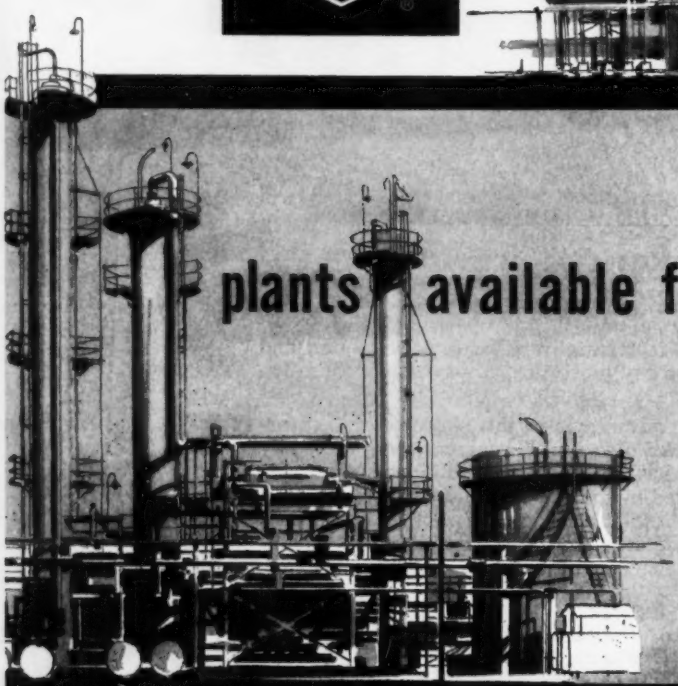

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WORLD-WIDE CONSTRUCTION FOR THE PETROLEUM, PETROCHEMICAL AND CHEMICAL INDUSTRIES

Mission: Tightening the Ties that Bind

In White Plains, N. Y., this week, Reichhold Chemicals, Inc., is reinforcing its global communications network—the ties that bind the firm's worldwide processing activities. Details of the program are being handled by two new members of RCI's top management team—Engineering Vice-President Herbert Miegel and Research Director Herbert Wampner.

The goal: stronger central guidance, with no lessening of local authority. The company reaffirmed its basic policy of decentralization, feels that the flexibility it affords is one of its most important operating advantages. But RCI's rapid expansion in recent years has strained communications, and engineering problems have reached a point where more coordination is needed.

Setting the Goals: Executive Vice-President Stefan Baum has often claimed that, although RCI has no large central engineering department, "we can call one together at any time." And that's just what they did late last month when top engineers from 13 U. S. plants and from 10 foreign countries were assembled at a week-long meeting in White Plains to discuss details of the new program.

Two consecutive three-day sessions were held—one to discuss research, the other to work out engineering problems. The basic aim, says Miegel, was to acquaint the engineers from the various locations with each other's problems, and with the corporate goals.

This kind of exchange is important to the development of personnel, says Miegel, helps them to mature faster. And it helps to train field personnel for management jobs on the corporate, as well as on the local, level.

Miegel's own background is a good example of this type of training within RCI. Prior to his appointment to the headquarters management team, he put in 18 years at the company's Detroit plant as plant engineer. And since '50, he has become thoroughly acquainted with many of the company's other operations, both here and abroad, through assignments as an engineering consultant, principally on phthalic anhydride plants.

CW PHOTO—MARSHALL

RCI's Miegel controls worldwide trade in engineering know-how.

Planning Sessions: One of the key problems tackled at the engineering conference was that of company-wide standardization. The group covered a wide variety of subjects, ranging from piping, heat exchangers, pressure vessels, instrumentation and electrical equipment to contracts, building specifications, area development, personnel and fire protection and safety.

Some categories, such as piping, stirred up a lot of discussion. But nothing was decided at this meeting. Instead, each standards category was assigned to an engineer from one of RCI's U. S. plants for further study and recommendations. (Representatives of RCI's foreign subsidiaries and affiliates weren't given assignments because of major differences between domestic and overseas operations. However, they were quite interested in the company's new approach to the problem.)

As each of these engineers submits his standards report, the headquarters engineering group will distribute copies to all plants for review and comment. From all this material, tentative standards can be set up. Estimated time to set up minimum standards: about six months.

Key to Progress: A major goal of RCI's central guidance plan is to increase the use of information that's already available within the company. Basic data needed for new process design and for the improvement of older processes comes from the engineers, says Miegel. Three new instruments for communicating this vital engineering information:

- An engineering news bulletin.

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ENGINEERING

Any engineer of RCI's worldwide organization can hereby report new processing know-how. Miegel anticipates getting out at least 10 or 12 such bulletins each month. The reports will be kept in special loose-leaf binders at each plant, will be cross-indexed to give all of the company's engineers ready access to a variety of processing gimmicks.

• A physical data handbook. Miegel's department will accumulate and disseminate up-to-date physical data turned up by the central research laboratory and in the processing plants.

• A surplus equipment register. This will be kept up to date at White Plains. Process changes at one plant frequently cause a surplus of equipment that may be in demand at another, says Miegel. Previously, plant managers handled surplus equipment by communicating directly with one another. But the central register should make it much simpler to locate a surplus item that may save a plant several weeks over the normal delivery time of a new item.

Guarding Know-How: In addition to considering more efficient methods of spreading know-how throughout the company, the engineers also had a special session with Richard Bremer, head of RCI's year-old patent department, on how processing tricks can be protected by patents. The purpose of this session wasn't to stimulate inventions—rather, it was to give the engineers an idea of what may be patentable, and why patent protection is valuable to the corporation.

Throughout the conference, says Miegel, the engineers freely swapped processing problems and solutions. Because most of these discussions involved confidential information on processes and equipment, he couldn't cite specific examples. But at least one significant idea traded across the table was important enough, Miegel predicted, to more than repay the cost of the conference.

Future engineering conferences are planned as an integral part of the stronger communications network. The frequency of these meetings will depend on the ability of plants to make the engineers available, will likely be every year or two. In addition, RCI will continue to hold special task-force conferences on specific

problems as it has in the past *(CW, Dec. 20, '58, p. 44)*.

The initial meeting was held in White Plains to enable visitors to tour the new phthalic anhydride plant now nearing completion in Elizabeth, N. J. Plant tours will be a part of each conference, says Miegel. And with RCI's increasing expansion program—budgeted for about $24 million in the current three-year period—he should have little difficulty finding an interesting plant site for the next engineering parley.

PROCESSES

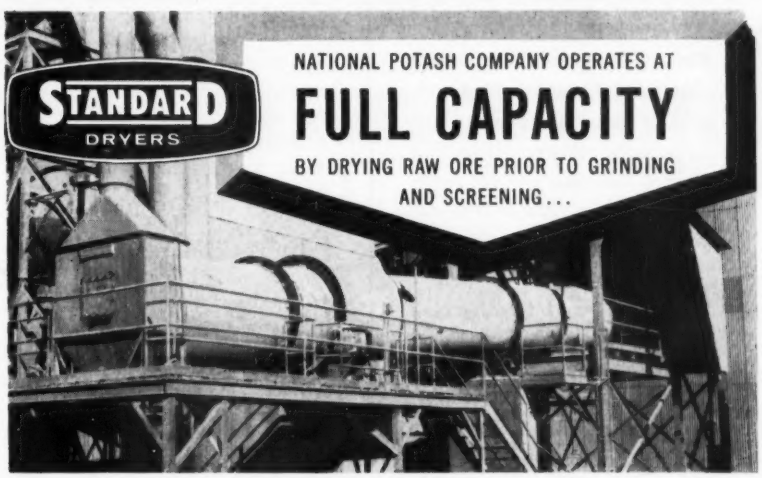
Silicon Alloy Cleanup: A new method of removing aluminum, calcium or magnesium impurities from silicon-base alloys — particularly ferroalloys ranging from 45 to 90% silicon—has been developed by Czech inventor Milos Cervinka, in Prague. The trick: bubbling carbon dioxide up through molten metal to oxidize the impurities to compounds that pass into the slag. This technique is reported to reduce aluminum impurities to at least one-half the amount initially in ferrosilicon alloy.

•

Beating Solar Heat: To prevent damage to delicate silicon cells of solar batteries in space vehicles, a team of Bausch & Lomb scientists have devised a special coating that "cools" the cells by reradiating solar heat. The coating consists of a 2.5-micron-thick layer of magnesium fluoride and silicon monoxide applied by vacuum coating techniques. Silicon cells utilize only about 10% of the solar energy they receive for the production of electric power, must be cooled to prevent damaging accumulation of the long-wave-length heat rays.

•

Continuous Epoxidation: Becco Chemical Division of Food Machinery and Chemical Corp. (Buffalo, N. Y.) has a new process that it believes will lead to commercial continuous production of epoxidized materials. Becco says the process is ready for pilot-scale development, and is offering it to the trade for refinement. The epoxidation is carried out by continuously feeding an unsaturated oil (e.g., soybean oil), an organic acid and hydrogen peroxide into the top of a packed column and removing epoxidized product and spent



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ENGINEERING

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Cyclobutane Derivatives: Eastman Chemical Products, Inc., a subsidiary of Eastman Kodak Co., is now offering developmental quantities of two little-known cyclobutane compounds, which, it claims, may open up a new field of chemical products. Key: a new commercial process that yields tetramethyl-1,3-cyclobutanedione and its reduction product, 2,2,4,4-tetramethyl-1,3-cyclobutanediol. Process details haven't been disclosed because of patent considerations. But it's known to start with isobutyraldehyde (available from Eastman's Longview Tex., oxo plant) and goes to the dimethyl ketene, which readily dimerizes to form the tetramethyl dione. Subsequent conversion into the corresponding diol is obtained by catalytic hydrogenation. Potential uses of special interest: reactions of the dione with certain carbonyl-group reagents to yield heterocyclic derivatives for photographic materials and dye intermediates; ester and polyester derivatives of the diol, which are reported to have exceptional thermal and hydrolytic stability and, therefore, to have potential use in plasticizers.

•

Furan Process: The use of a semiconductor metallic catalyst is credited with speeding up the production of furan in a new process now being tested on an industrial scale at the Latvian Institute for Organic Synthesis. The catalyst is said to increase furan yields, at the same time permit the reaction to be carried out at lower temperatures. Furan is produced as a base for several types of heat-resistant resins and for synthetic fibers.

•

Polyethylene Catalyst: Two recent patents describe what Aries Associates, Inc. (Stamford, Conn.), says is a high-density-polyethylene catalyst claimed to have advantages over Ziegler- and Phillips-type catalysts. U.S. 2,898,330, assigned to Aries Associates, describes the use of technical-grade aluminum chloride with about 7-20% (molar basis) of tetra-

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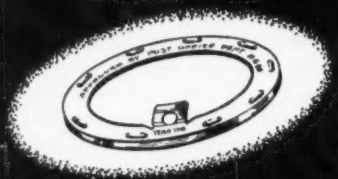

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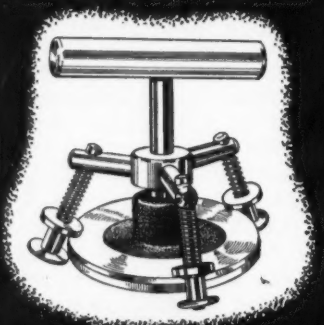

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Naphthol
Naphthenic Acids (up to 180°F)
Nitric Acid (above 80%)
Nitrocellulose
Nitrogen
Nitrogen Peroxide (dry)
Nitroglycerine
Nitrous Acid
Nitrous Oxide (dry)
Oleic Acid
Organic Amines
Oxalic Acid
Oxygen
Ozone (wet)
Paints
Palmitic Acid
Paraldehyde
Peanut Oil
Phenol (up to 212°F)
Phosphorus (dry)
Phosphorus Pentoxide (dry)
Phthalic Acid (pure)
Picric Acid
Pinene
Pine Oil
Plastics
Potassium Bromide
Potassium Chlorate
Potassium Chloride
Potassium Dichromate
Potassium Ferricyanide
Potassium Nitrate
Potassium Permanganate
Potassium Sulfate
Propionic Acid
Propylene Glycol
Pyridine
Resins
Resorcinol
Rubber
Salicylic Acid
Sewage
Shellac
Sodium Acetate
Sodium Bicarbonate (dry)
Sodium Borate
Sodium Chlorate
Sodium Chloride
Sodium Chromate
Sodium Nitrate
Sodium Oxalate
Sodium Sulfate
Sodium Sulfocyanide
Sodium Thiosulfate
Steam, Low Pressure
Stearic Acid
Streptomycin
Succinic Acid
Sulfur Dioxide (dry)
Sulfuric Acid (fuming)
Synthetic Rubbers
Tannic Acid (pure)
Tars
Tartaric Acid
Tetramine
Toluene
Triacetin
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ENGINEERING

tin or lead. U.S. 2,900,374, issued to Robert S. Aries, describes a similar catalyst system with the addition of less than 1% of an activator consisting of titanium or vanadium halide. Aries claims that its catalyst system is simpler and cheaper than others, is nonflammable and easily separated from the product.

•

Desulfurization Process: A new, 8,000-bbls./day distillate desulfurization unit at the British American Oil Co.'s Clarkson, Ont., Can., refinery is using reformer-gas hydrogen and a pelletized cobalt-molybdenum catalyst. Canadian Kellogg Ltd. (Toronto), subsidiary of M. W. Kellogg Co., handled design, engineering, procurement and construction. The unit will remove 90% of the sulfur from three feed stocks, can be doubled in capacity with minimum changes.

•

Radiation Sterilization: Pilot operation of a commercial-size irradiation unit for sterilizing packaged medical, pharmaceutical and biological products is scheduled to begin by the end of the year at the United Kingdom's Wantage Irradiation Laboratories. The test unit is designed to handle about 3 tons/day of medical products in packages of 1-cu.ft. capacity. Radiation source is 150,000 curies of cobalt, capable of supplying 10,000 to 5 million rads (radiation absorption doses; 1 rad equals about 1.2 roentgens). Estimated requirements for treating products range from 20,000 rads/pound of product for disinfestation to 2 megarads/pound of material for sterilization and disinfection.

•

Silicon Casting: A method of casting optical-quality silicon has been developed by Hughes Aircraft Co. (Culver City, Calif.). Single crystals of silicon, highly transparent to infrared radiation, are normally used in infrared sensors. Hughes has found, however, that the polycrystalline material—formed by pouring molten silicon (under inert atmosphere) into a special refractory mold—is not significantly different from monocrystalline silicon in IR transmission. Hughes has cast silicon domes with an outside diameter up to 8 in., says the new process allows volume production of silicon lenses, domes and flats.

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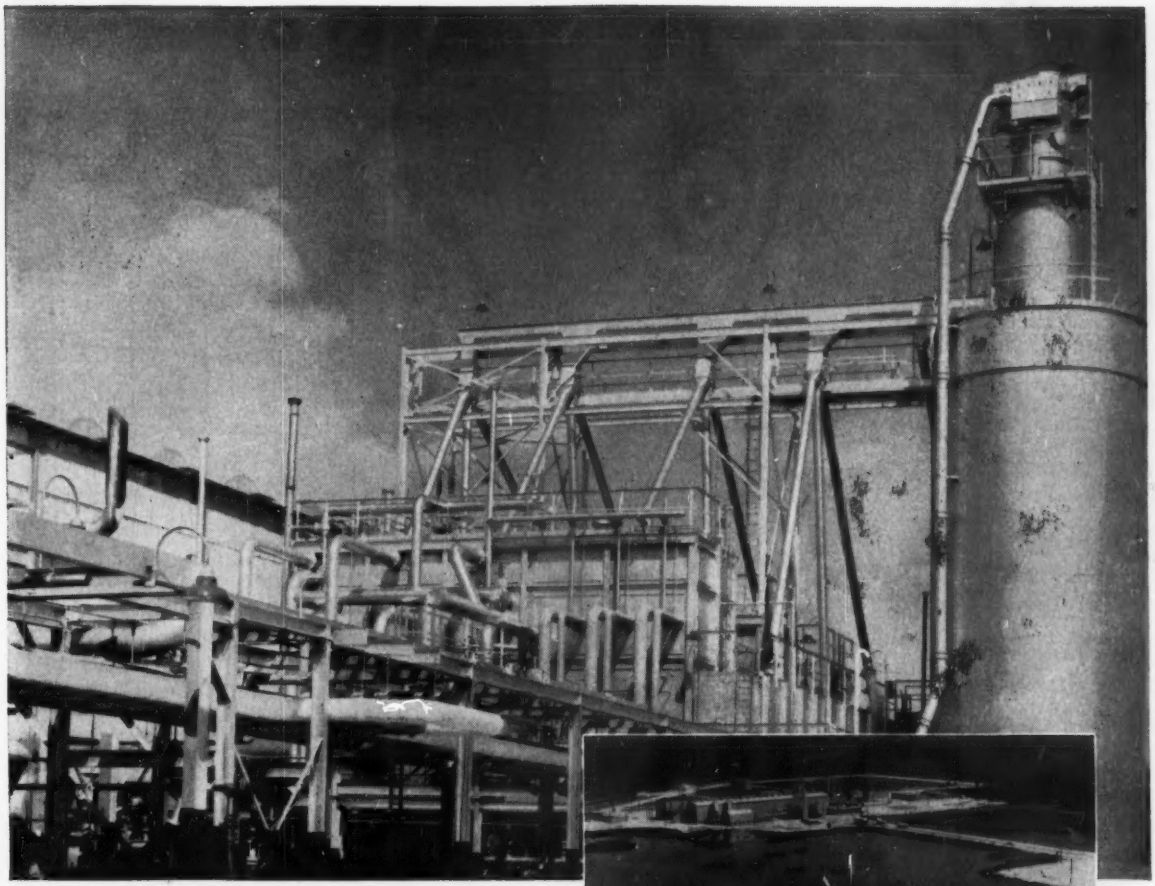

Liquid Hydrogen . . . ultimate rocket fuel . . . is made at this new Air Force Tonnage Facility at West Palm Beach, Florida. At center is the heart of the unit—the "converter cold box", where mixed ortho and para Hydrogen are converted to a high percentage of para form, which is highly purified and liquefied for storage.

The storage tanks in the foreground hold the world's coldest fuel—Liquid Hydrogen, at minus 423°F, for use in developing new missile and space engines. Plant can be seen in background.

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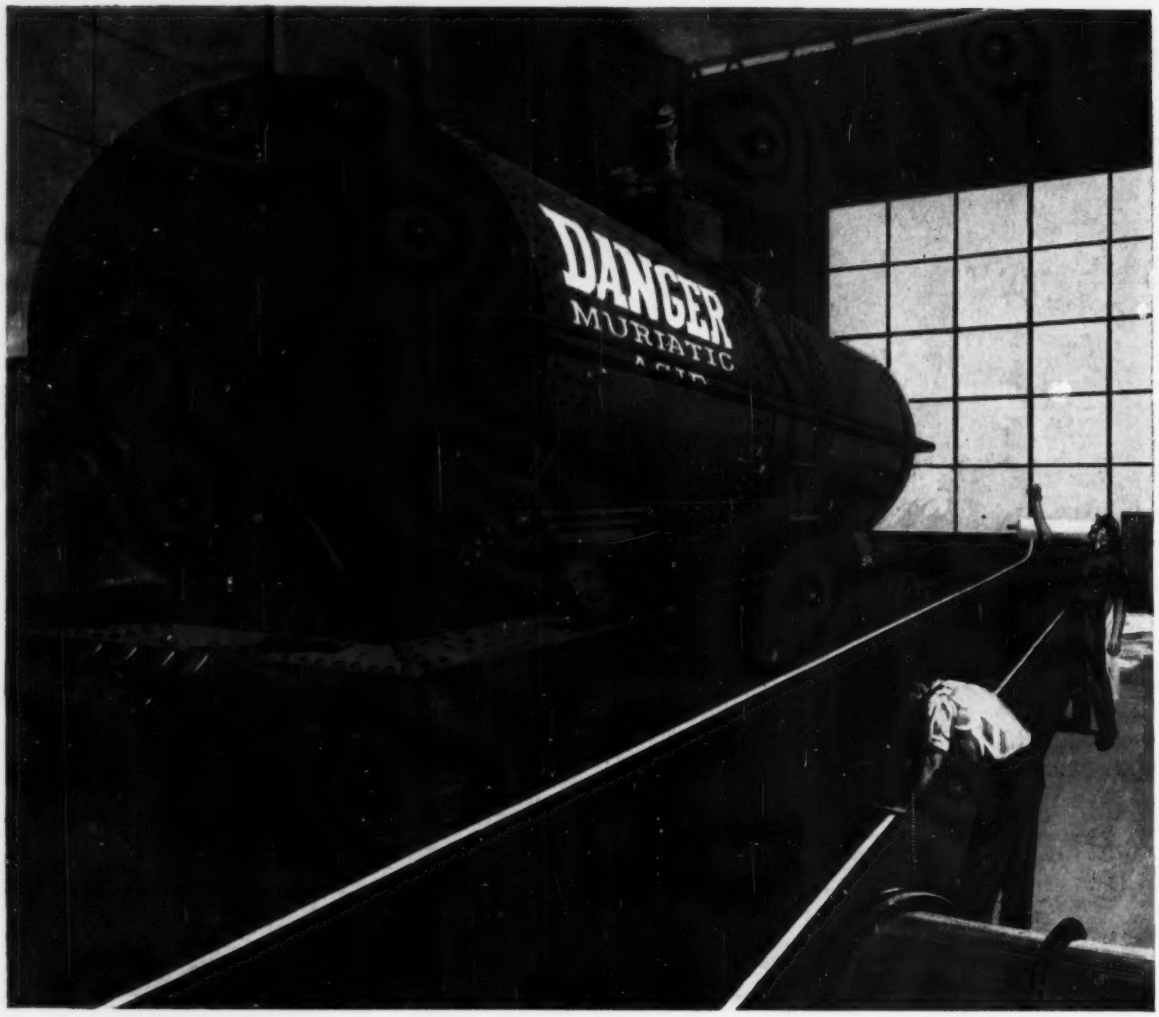

U.S. Permobond Linings protect tank car carrying muriatic acid

Permobond® is the rubber lining that is resistant to destructive chemicals. Here you see it about to be applied to a tank car by U. S. Rubber's local applicator in the New Orleans area—Avondale Marine Ways, Inc.

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Technology
Newsletter

CHEMICAL WEEK
October 17, 1959

Project Mercury may employ plastic or ceramic heat shielding to protect the Air Force's first manned space vehicle, says Mac C. Adams, deputy director of Avco-Everett Research Laboratory (Everett, Mass.).

At last week's high-temperature symposium sponsored by Stanford Research Institute (*CW, Oct. 10, p. 53*), he told *CW* that ablating materials—coatings that gradually melt or vaporize—will likely get the nod over metal heat-sinks. Reasons: "Great progress in re-entry methods" point unanimously to ablation, says Adams; ablating shields may be only one-fourth as heavy as heat-sinks. Likeliest heat-sink candidate is beryllium shielding, which Brush Beryllium has developed for the Air Force. Chances are that both types will be thoroughly tested under Project Mercury before the first human passenger is launched.

•

A tricky new way to separate salt from its impurities has been patented by International Salt Co., Inc. (Scranton, Pa.) (2,907,456). The firm expects to license the process for separating other minerals, chemicals, plastics, metals, food and agricultural products.

The process is based on the difference in heat absorption between rock salt and its impurities (anhydrite, dolomite and shale). Rock salt doesn't heat up under an infrared source; impurities do. Crushed, impure salt is exposed to infrared, then passes onto a conveyer belt coated with heat-sensitive resin. Pure salt flies off the end of the belt into a bin some distance from the belt. Impurities adhere to the belt, have less momentum, and are collected in a bin closer to the end of the belt.

•

Tetrahydrofuran-based fiber and film are claimed in a new Du Pont patent (2,906,738), which covers a new process of curing polytetrahydrofuran, copolymers of tetrahydrofuran, and poly (polytetramethyleneether) urethanes. Key: use of a free-radical generator and a free-radical acceptor. Generators include organic peroxides (e.g., dicumyl peroxide, di-N-methyl-tert-butyl percarbamate) and azo-bis-aliphatic nitriles (e.g., 1,1′-azo-bis-cyclohexane carbonitrile). Acceptors are N,N′-substituted bismaleimides.

•

The first reactor to produce low-temperature process heat will be built at Point Loma, near San Diego. The $4-million experimental reactor (*CW Technology Newsletters, Sept. 19, Oct. 10*) will be built by the Atomic Energy Commission to supply heat to the Interior Dept.'s demonstration plant for desalting sea water.

•

Look for these cardiovascular drug developments at next week's annual meeting and scientific sessions of the American Heart Assn. in Philadelphia: new blood cholesterol-lowering methods using nicotinic acid

(niacin), triparanol (*CW Technology Newsletter, Oct. 3*), and benzmalecene; acute thrombophlebitis therapy combining anticoagulants and a blood clot-dissolver (plasmin or fibrinolysin); and use of chlorothiazide to combat heart beat slowdown known as Stokes-Adam syndrome.

•

A new broad-spectrum antibiotic, more effective, longer-acting than tetracycline, which is currently the broad-spectrum drug in widest use, has been unveiled by American Cyanamid's Lederle Laboratories Division (Pearl River, N. Y.). It is Declomycin (demethylchlortetracycline), a red-toned product of a mutant strain of the organism *Streptomyces aureofaciens* from which Aureomycin was isolated in '46. Lederle's R & D investment in the newcomer: six years and about $2.5 million.

•

A new "single package" silicone sealant that cures in place without the addition of catalyst or heat has been developed by Dow Corning. The experimental product isn't yet available for general evaluation but the firm is inviting "qualified" aircraft and missile makers to try it. Features: it air-cures in 24 hours to a light, tough, rubbery solid withstanding —70 to 500 F, resists moisture and ozone, adheres well to most surfaces without requiring a primer.

•

Acrolein polymers with 50,000-300,000 molecular weights are produced in yields of over 70% in two new German-developed processes. Farbwerke Hoechst AG. (Frankfurt) claims acrolein and other unsaturated aldehydes (e.g., crotonaldehyde, its halogen derivatives, and dimethyl acrolein) can be polymerized in xanthic (xanthogenic) acids. Degussa (Frankfurt) uses a 10% solution of sulfur dioxide in water to make acrolein polymers, which, like Hoechst's, are soluble in a number of organic solvents. Alternate reagents may be used for either method. Resulting polymers are potentially useful in varnishes, films and other surface coatings.

•

A technique to minimize uranium waste disposal problems has been perfected by the Bureau of Mines Intermountain Experiment Station (Salt Lake City). Originally devised to conserve water in acid leach-solvent extraction processes, the new method uses barren solution from solvent extraction units to replace the fresh water commonly used for countercurrent decantation. Result: a reduction of process water requirements (normaly 3-4 tons of water per ton of ore), which also limits the volume of slimes discharged to streams and the amount of radioactivity placed in tailings.

The bureau employed the water-saving method in tests it conducted for AEC on Front Range, Colo., ores. The researchers report that it works particularly well in amine extraction systems (because no iron is present) and that it can be extended to acid leach-ion exchange systems, provided deleterious ions, such as nitrates, are not recycled.

Textile Technology in Chemical Engineering

Fabric Construction and its effect on filtration

In spite of the emphasis placed on *fibers* and their specialized performance, the chemical and physical characteristics of a fiber are only part of the filter-fabric's story. *Construction* of the fabric (the weave, count, yarn twist, etc.) must be given thorough consideration in the final selection of a filter fabric or the establishment of filtration goals.

Weave, for instance, is a fundamental element in fabric construction. The various weaves are the result of different systems used in interlacing the lengthwise "warp" yarns with the crosswise "filling" yarns.

The *plain* weave has a simple "one up and one down" construction. By raising or lowering the "count" (number of warp and filling yarns per inch) this weave may be made as tight or as open as necessary.

The *twill* weave is recognized by the familiar diagonal "twill" line. Twills have fewer interlacings than the plain weave, and therefore offer greater porosity—but this, again, depends on the count.

The *satin* weave has even fewer interlacings, providing smooth surface, increased porosity and high cover factor (particularly important in gaseous filtration). Cotton fabrics in this weave are commonly known as "sateens."

These basic varieties—plain, twill and satin—have many variations. But whatever the weave, performance is seriously affected by count and other factors involved in fabric construction.

Which all adds up to this: for complete information about filter fabrics, don't go it alone. Go to the nearest specialist who distributes Wellington Sears filter fabrics. He'll help—so will our more than a century of experience in serving the fabric needs of industry. And for a handy booklet of information, write Dept. M-10

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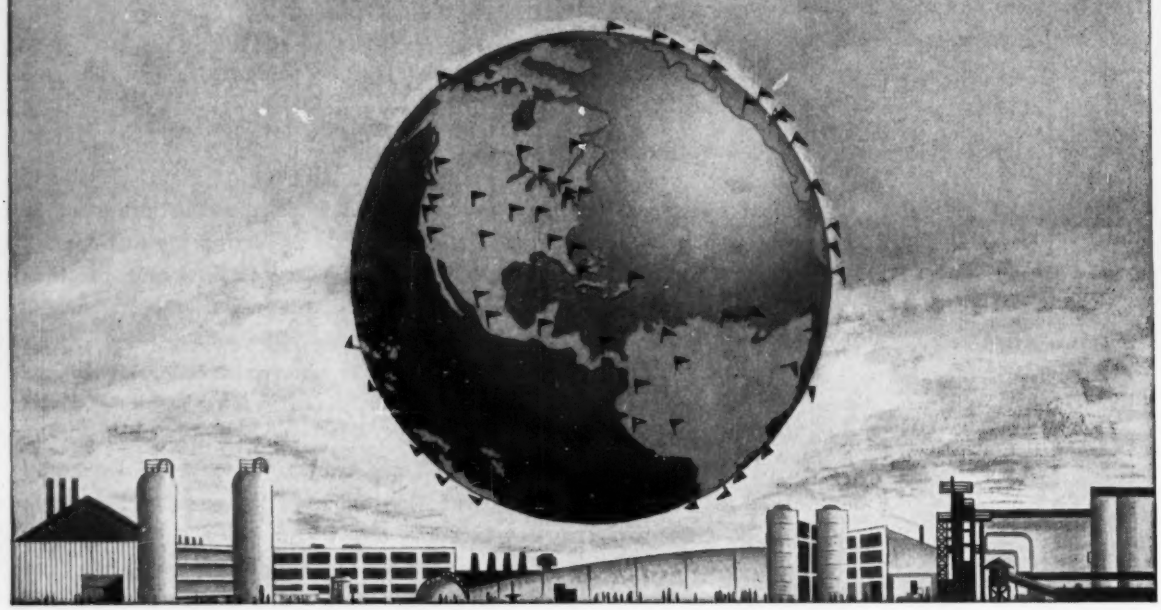

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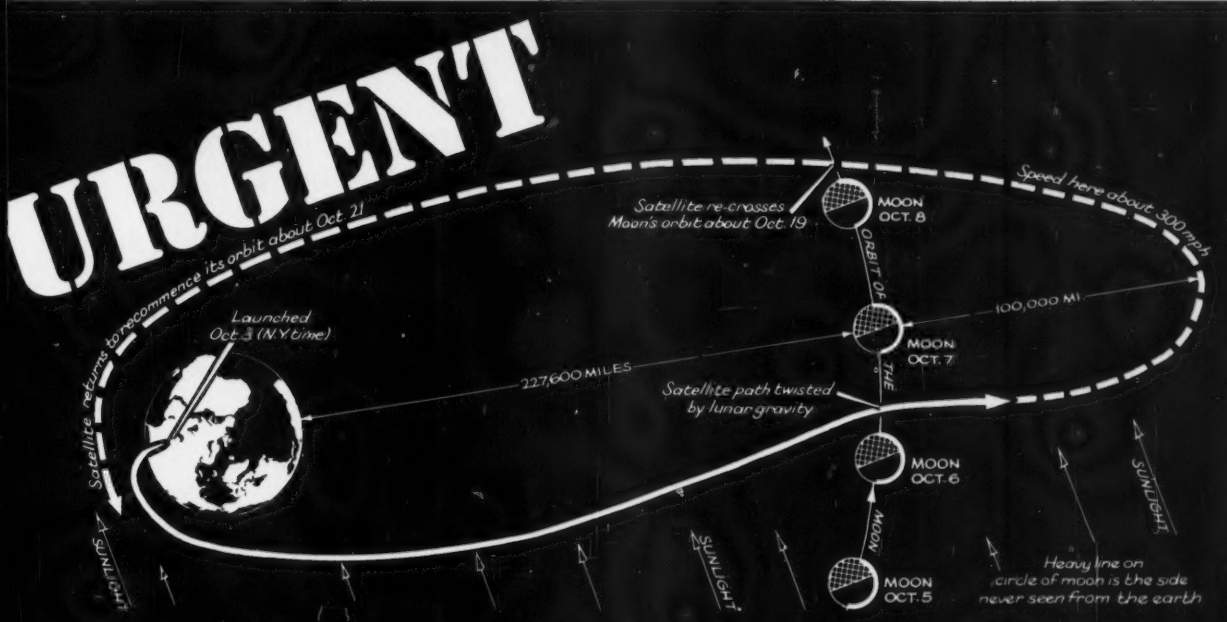
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SUNLIGHT
SUNLIGHT
Heavy line on circle of moon is the side never seen from the earth

Russia's technological triumph in sending a missile around the moon stresses urgency of . . .

Doubling Navy's Budget for Basic Research

In Lunik III's light, a new report that makes a good case for doubling the Navy's basic research is urgent reading in Washington this week. Prepared by Arthur D. Little, Inc. (Cambridge, Mass.), for the Naval Research Advisory Committee, the two-volume report marks a beginning of "research on research" in the Navy, according to C. G. Suits, NRAC chairman (and General Electric vice-president and director of research). More than that, it compares the U.S. and Soviet research approach, gives cogent reasons and guidelines for veering toward more fundamental studies.

ADL talked to a broad spectrum of research-oriented companies in forming its recommendations, frequently encountered this concept: "One should never do less basic research than his strongest competitor."

Figuring that the Navy "operates in a fiercely competitive field having a high technological obsolescence rate," ADL compared it with companies in the same fix—10 firms, two of the most successful in each of five industries (chemical, petroleum, communications-electronic, pharmaceutical, and materials).

These 10 spent a minimum of 10% and a maximum of 20% of their R&D budgets on basic research, for an average of about 16%, "or more than double the present Navy figures of 6-8%." This comparison is, of course, arbitrary, the report concedes, since the Navy's mission, competitive situation, size and complexity are different from those of corporations or groups of corporations. Obviously, "the consequences of being second best in national defense today represents a risk far greater than that faced by any corporation," the report states.

For purposes of this study, this official Dept. of Defense definition of basic research was used: "Basic research is that type of research which is directed toward increase of knowledge in science. It is research where the primary aim of the investigator is a fuller knowledge or understanding of the subject under study."

One conclusion ferreted from analysis of industrial research is equally applicable to the Navy, in ADL's opinion. That is, applied research and development tend to proceed more rapidly and at lower cost when adequately backed by basic research.

Research Awareness: How do the U.S.S.R. and the U.S. compare in awareness of the importance of this axiom? Soviet leaders are credited with a greater appreciation of science's role in furthering national progress. Furthermore, the percentage of ministerial-rank persons having a scientific or technical education is higher than that found at the management level of most top corporations in the U.S.

Underscoring this point, the new report states: "In fact, the U.S.S.R. appears to be the first nation to fully appreciate the importance of science. This is evident in many areas, such as the vast effort in technical education, the high percentage of gross national product expended on research and development, the important stature accorded scientists in the Soviet society, and the large program to collect, translate and disseminate scientific publications."

Relevant to Lunik III — and other

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Have we told you about two newly available materials in the field of synthetic nitrogen chemistry? They're Pyrrole and N-Methyl Pyrrole. Both are highly reactive and have application in organic synthesis. We could set down here some physical characteristics, but instead we invite you to write for our latest technical bulletins. In them, we point out such salient facts as molecular weight, solubility, boiling point and many other interesting data designed to help you determine whether you may have applications. If you desire, we'll send sample quantities, too—no charge, of course. Should one of these chemicals seem to meet your needs, we'd be delighted to get together to discuss possibilities and problems.

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RESEARCH

Soviet space accomplishments — is this finding: back of the recent technological successes by the Soviets is a program of basic research staffed by approximately the same number of scientists as the U.S. has — about 27,000.

The nation that places the greater emphasis on a particular field of science will tend to lead in that field. While over-all comparisons have many shortcomings, "it appears that currently the U.S. leads the U.S.S.R. in most areas of physics, mathematics, medicine and chemistry; is on a par in aviation and space medicine, metallurgy, combustion, theoretical physics, meteorology and oceanography; and is behind in physical chemistry and many areas of geophysics."

But the future isn't as attractive, since the U.S.S.R. is training basic researchers at a rate about 50% greater than the U.S.

Puzzler: What's to be done? More men must be trained and perhaps more motivated to remain in basic research; Navy labs must offer competitive salaries and administrative policies.

However, Navy Secretary William Franke, in acknowledging the value of the new report, wrote the NRAC chairman, "We must realize that our extensive national commitments require great care in maintaining a balance between the various portions of the total budget."

That sentiment isn't being shared everywhere on Capitol Hill. Relative positions of the U.S. and Russia after two years of the space age—it is barely 24 months since the Soviets launched Sputnik I — appear to be essentially unchanged. So there will be heavy demands for the U.S. to catch up in space projects. There's already talk about need for $2 billion on top of today's estimated $3.5-billion missile spending.

While such talk isn't taken seriously right now — in spite of conversational ping-pong about a "space tax" to cover the cost—other plans are getting serious consideration. Sen. John Sherman Cooper (R., Ky.) wants President Eisenhower personally to support a real military unification—a single uniform force. His theory is that taxpayers would get more for their dollars, not only in space but also in all military areas. Sen. Clair Engle (D., Calif.) wants the Atomic Energy Commission concept applied to space probing. Just as AEC develops both peaceful and military applications, so would the civilian space agency develop both civilian and military rockets for space and all the instrumented vehicles they would carry.

Whatever happens, the President is aware of the problem and likely will say something on the subject in his January State of the Union message, if not before. Chances are that the irrefutable importance of a basic approach to the nation's scientific programs will get new emphasis in the future. If so, the new, heavily documented, $125,000 NRAC report should get some of the credit.

PRODUCTS

Clinical Comer: Ismelin, a new drug developed by Ciba Pharmaceutical Products Inc. (Summit, N.J.), reportedly controls severe hypertension with a single daily tablet. It is also known by the laboratory designation SU-5864 (guanethidine), is not yet commercially available.

•

Color Line: Francolor, Inc. (Woonsocket, R.I.) division of Compagnie Francaise des Matieres Colorantes (Paris, France) offers a new line of dispersed dyestuffs for polyester fibers. Called Esterophile colors, they feature brightness and fastness, can be applied in pressure equipment (for best yield) or with a carrier at the boil.

•

New Sequestrants: Dithiooxamide and six of its N,N′-disubstituted derivatives are now available in developmental quantities from Mallinckrodt Chemical Works (St. Louis). They're said to be promising in pigments, metal sequestrants, duplicating processes, and organic intermediates.

•

Tag Team: Three new gamma-ray radioactivity standards are available from the Radioactivity Section, National Bureau of Standards, Washington 25, D.C. They are strontium-85, columbium-95, mercury-203. Price: $27/standard 5-gm. sample.

•

Bone Mender: Surgeons will have available early in November a new urethane to repair long bone fractures. It's called Ostamer, is contained

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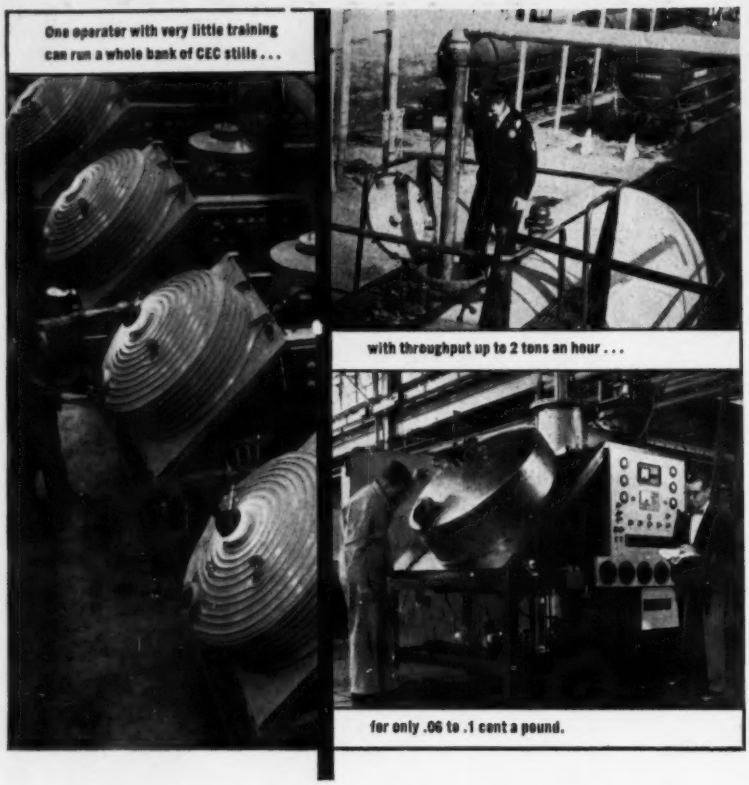
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RESEARCH

in a new kit with sterile prepolymer (glycol bonded to an aromatic polyisocyanate) and activator (a mixture of aliphatic tertiary amines and water). The plastic bonds and stabilizes fractures so that weight bearing is possible in 48 hours in some cases. The product, offered by the Wm. S. Merrell Co. (Cincinnati, O.), division of Vick Chemical Co., stems from research at Philadelphia's Hahnemann Hospital (*CW Technology Newsletter, Nov. 17, '56*).

•

Spray-on Reagents: Detection reagents (called Chromo-Spray) for amino acid and carbohydrate chromatograms are available in aerosol form from Schaar and Co. (7300 West Montrose, Chicago 34, Ill.).

EXPANSION

• Fiber Research (Seattle, Wash.) is a new independent laboratory for pulp and paper studies.

• Imperial Oil Ltd. will build a new research center in Sarnia, Ont. First phase of the project will cost more than $1 million.

• Taylor Fibre Co. (Norristown, Pa.) has organized an "advanced materials division" to investigate and develop laminated plastics and vulcanized fiber for use in rockets, missiles, jet aircraft, and nuclear reactors.

• U.S. Stoneware Co. has dedicated its new research and development center (called Chamberlain Laboratories) at Stow, O. Principal projects are in plastics, rubber, adhesives and protective coatings.

• The Siegler Corp.'s Hufford Division (El Segundo, Calif.) recently completed a new metallurgical laboratory structure.

• Battery-maker Globe-Union, Inc. (Milwaukee, Wis.) plans a new engineering center that will double the size of its present facilities.

• The U.S. Dept. of Agriculture, Atomic Energy Commission, and Public Health Service plan a joint research project on methods of removing strontium-90 from milk (e.g., with ion-exchange resins) that are suitable for dairies. Says USDA: "The levels of radioactive fallout from past nuclear testing do not justify action to decontaminate milk supplies. The [new] research is designed to provide practical answers to problems that might arise in the future."

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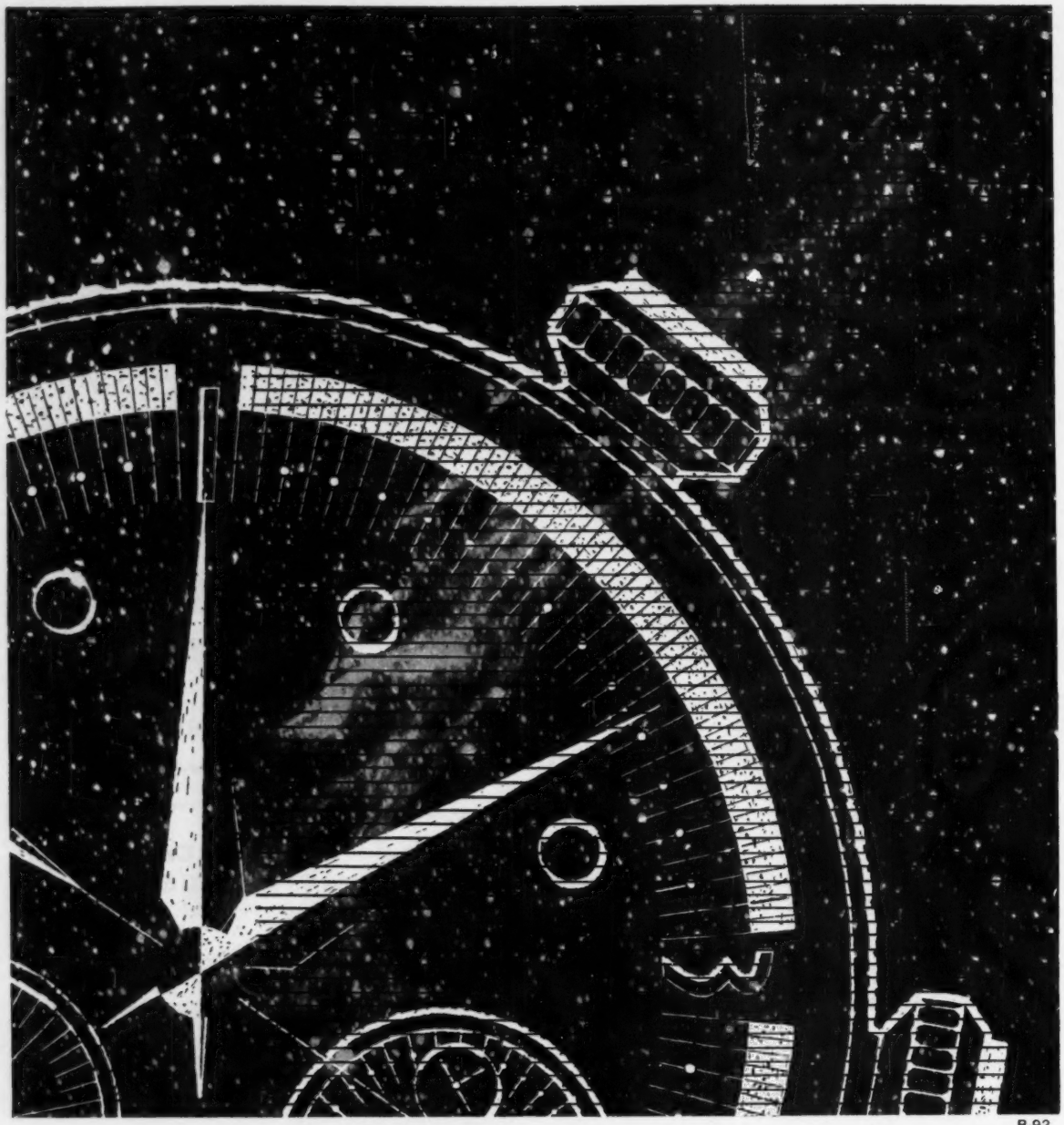

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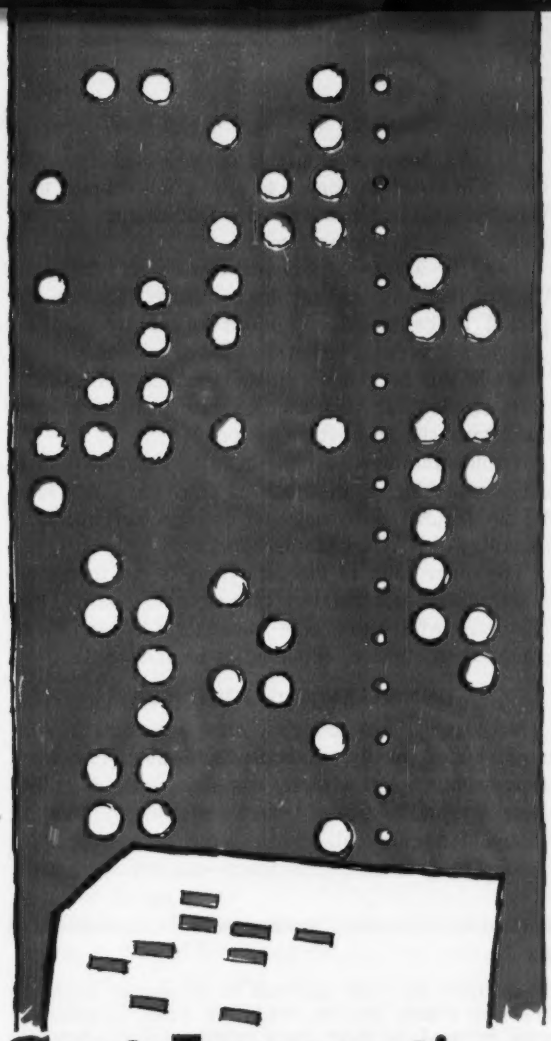

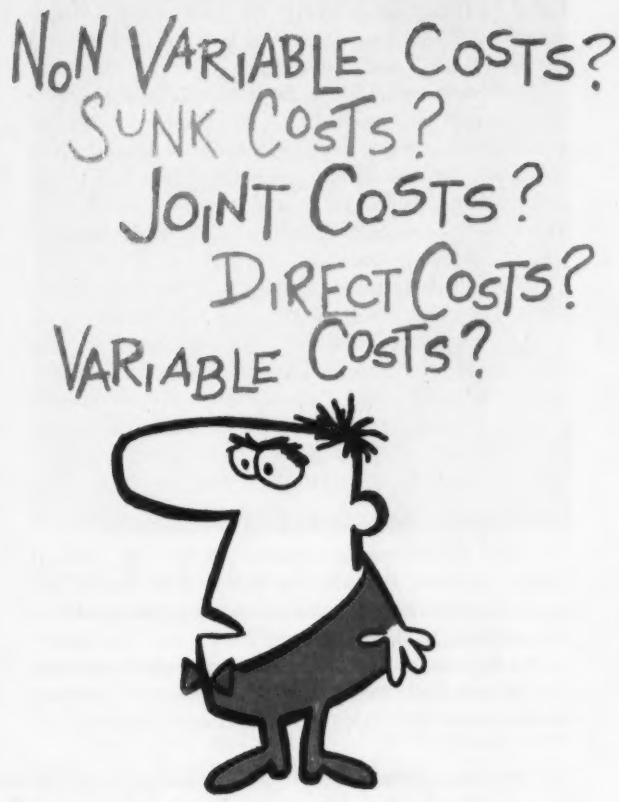

Cost Accounting: Your Problem Too

by Erwin von Allmen

After a full year's trial at a big U.S. chemical company, a promising and much-needed new cost-accounting system recently was abandoned and the old one reinstated. The new method wasn't at fault. Rather, poor communication, lack of understanding between cost accountants, operating management and key executives were cited as principal causes of the method's failure.

The new system was too sophisticated (at least as far as cost-accounting know-how was concerned) for management men unschooled in cost accounting. Cost accountants and managers weren't speaking the same language.

Competitively, the company is undoubtedly worse off for its inability to work out the desired cost reforms. Today's chancy chemical markets demand the tightest possible costing and pricing procedures if companies expect to withstand the triple-barreled threat of upward-spiraling costs, slim profit margins and low-priced imports.

The thumbnail case history of that company

bares an important problem: the widespread management notion that cost accounting is the private domain of "thin-nosed" specialists.

Sound cost-control attitudes, adequate costing know-how, as well as know-why, at all centers of company decision-making are axiomatic to profit-making. The unhappy alternatives: high and artificially priced chemical products, climbing production and overhead costs, unnecessary or profitless purchasing, marketing, production and research ventures.

To avoid these traps, management has little choice but to keep abreast of latest costing techniques.

The situation is particularly acute in companies that own or rent electronic data-processing machines—costly, lightning-speed "accountants" that obediently grind out reams of cost data at the flick of a switch. This data will be meaningful only if operating managers know their own costing systems.

COST CHARACTERISTICS IMPORTANT

Three characteristics—source (direct or indirect costs), behavior (variable or nonvariable costs) and status of commitment (sunk or out-of-pocket costs)—are sufficient to describe costs:

(*1*) *By source*—direct costs are associated with some specific economic entity such as a plant or product: indirect costs are all other, independent expenses.

(*2*) *By behavior*—variable costs are charges that change in direct proportion to production volume; nonvariable costs are relatively constant charges that are independent of volume change.

(*3*) *By status of commitment*—sunk costs are charges that have already been incurred and are expected to be recovered; out-of-pocket expenses are charges not yet incurred at the time of reference.

While this breakdown doesn't include semivariable costs, it effectively characterizes most charges, reduces costs from the abstract to the real.

To illustrate how cost characteristics can be used in decision-making, a hypothetical case study has been set up (below), involving Joe Smith, chief operating executive of NACL Chlorine Works.

The main point of the case study is not to resolve a particular problem but rather to emphasize that managers who know cost characteristics are better equipped to manage, eliminate or incur costs.

UNDERSTANDING JOINT COSTS

Not the least of today's costing problems is joint costs. Unfortunately, as coproducts and coprocesses grow technologically more complex, joint costs become tougher to figure. Direct costs become next to impossible to pinpoint.

Joint-product costing methods—accounting systems

Case Study 1: How to Best Identify Costs

A quick example demonstrates the utility of classifying costs by their characteristics: source (direct or indirect), behavior (variable or nonvariable) and status of commitment (sunk or out-of-pocket). See text for definitions.

Take the timely but hypothetical case of Joe Smith, chief operating executive of NACL Chlorine Works, maker of electrolytic chlorine and caustic from salt domes in Louisiana.

Like most chlorine-caustic producers, Smith right now is saddled with idle cell and chlorine handling capacity. But chlorine market prospects look promising. Smith, therefore, is toying with the idea of doing one or more of several things.

He could increase chlorine production and (1) add a new salesman to move his increased output, (2) sell packaged caustic, (3) bide his time by renting bulk caustic storage facilities, (4) install new process equipment to upgrade caustic to more profitable products.

What kinds of costs will Smith incur by each of these alternatives? His best approach to an answer would be to set up a table like the one below, which identifies the costs involved by their characteristics—source, behavior and status of commitment:

Reading down the first set of columns, Smith can tell which costs to attribute to chlorine and which to tag to things other than chlorine. By running down the second set of columns, Smith can easily see which costs will vary directly with chlorine production and which will remain constant as chlorine production increases. The third set of figures tells him what new charges he will incur and what already-acquired assets will do for his expansion plans.

Knowing the characteristics of the costs generated by his proposed moves, Smith, like all managers using this method, is better equipped to control, eliminate or incur them. Knowing this, he's in the best position to pick his alternatives.

This method of classification works for all costs—from production to R&D.

Characteristics

	BY SOURCE		BY BEHAVIOR		BY COMMITMENT	
	Direct	Indirect	Variable	Nonvariable	Sunk	Out-of-pocket
Depletion charges on salt deposits	X	—	X	—	X	—
Cell electrode costs	X	—	X	—	—	X
Chlorine handling depreciation charges	X	—	—	X	X	—
Office building depreciation charges	—	X	—	X	X	—
New salesman's salary	X	—	—	X	—	X
Caustic packaging inventory depletion	—	X	X	—	X	—
Rental of new caustic storage facilities	—	X	X	—	—	X
Next annual Christmas party	—	X	—	X	—	X

that attempt to make charges against coproducts and coprocesses in some balanced way—are the popular answer to the joint costing problem. Three basic methods—"sales realization"; "physical output"; "by-product costing"—are used to unsnarl joint cost tangles.

Originally developed for financial accounting purposes, the methods are now being widely adopted by all corporate functions to figure joint expenses.

Here's a condensed description of the three important coproduct costing methods:

(*1*) *Sales realization method* allocates costs by each product's share of total sales. It assumes that all coproducts earn profits at the same rate.

The system is often used in petroleum and petrochemical product costing and generally lends itself to processes that turn out multiple products with relatively close price tags.

American Cyanamid distributes tall-oil distillate costs this way. In coproduct pricing, Allied sometimes allocates costs by each product's value instead of by total coproduct values.

(*2*) *Physical output method* distributes charges to coproducts in proportion to their physical production.

At Allied, joint chlorine-caustic material and cell operating costs are negotiated between operating and financial groups.

Alabama By-Products Corp. accounts its complex coking operations by the physical output method, divides costs into pre- and post-split-off categories, depending on whether they're incurred before or after the actual coking step.

The physical output method works best where unit economic values and costs of coproducts are closely tied to the products' physical output rather than to some other gauge.

(*3*) *By-product costing method* ascribes all costs to a single main product, chalks up coproduct values as credits against total costs. It works best for processes that turn out relatively few products and where one product has a comparatively high unit value.

Comparing: How do the three joint costing methods work, compare and differ? The answers are found in the case study on p. 88, which costs out three hypothetical coproducts A, B and C turned out in the same process. Advantages and limitations of the three methods are clearly apparent from this example.

Despite limitations, however, each method has a place in CPI coproduct costing. Many process company accounting departments, in league with other departments, have developed special take-offs that are now part of their everyday costing practices.

Petroleum refiners, for example, have tied the sales realization and physical output methods together in their "barrel-gravity" method. A factor (percentage of each product in the crude, times its API gravity) is figured for all fractions. Each fraction is then assigned a share of joint costs in proportion to its percentage-gravity factor. This ties product costs to product physical properties.

Union Carbide recently standardized joint costs on two basic methods: (1) Where coproducts are produced, joint costs are assigned by factors developed by cost accountants and chemical engineers. The factors are derived from the physical characteristics of the process (e.g., relative tonnages produced) and from associated handling problems. Market value isn't a consideration. (2) Where product costing seems more appropriate, UCC applies its own unique variation of the above method. A by-product is charged with none of its production costs, nor is its market value credited to the process. Hence, the main product must bear all costs and must show an adequate return on investment without the help of by-products.

Before this method was introduced, Carbide credited (at going market prices) up to two months' inventory to processing costs. All production in excess of material immediately salable (up to two months' worth of inventory) was carried at no value.

Over the years, Allied has experimented with a number of joint costing variations, even went to such painstaking refinements as distributing distillation fuel

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Meet the Author

Erwin von Allmen is Arthur D. Little's staff consultant on CPI business problems relating to market research, mergers, acquisitions, plant locations, etc. Cost accounting, subject of von Allmen's CHEMICAL WEEK report, is germane to all of these—and most other—CPI business problems. Von Allmen has been with ADL three years. Before that, he spent nearly four years with Procter & Gamble's research and development department. He teaches marketing at Northeastern University, holds a B.A. from University of Connecticut, an M.A. from Williams and an M.B.A. from Harvard Business School.

costs according to product heats of vaporization. Allied feels that the simplest allocations are, generally, the best.

Joint Cost Ground Rules: Managers responsible for controlling joint-product costs will probably use one of the allocation methods mentioned above, or some variation. If these costs are to be applied for other than financial cost-accounting purposes—handle with care.

That's especially true when joint costs are used to evaluate product, process and personnel performance —not an uncommon practice in many process companies.

When joint costs are applied for other than cost-accounting ends, four key ground rules should be observed:

(1) Double-check the degree of directness and variability of all significant costs, especially when figuring anticipated cost savings from cutbacks in operating levels.

(2) Make decisions on a single cost factor only after a detailed review of its over-all cost effects.

(3) Set long-term performance goals for processes to maximize total revenues less total out-of-pocket costs.

(4) Keep in mind the built-in inertia of price and product mix. Price jockeying and erratic availability of products can antagonize customers and prove costly to producers.

Coproduct and coprocess costing is tricky at best. It will probably become trickier as chemical technology evolves in answer to scientific and competitive demands. More important than ever are well-organized cost-accounting and reporting systems—backed by managers knowledgeable in their use.

WRITING OFF $1.4 BILLION

A knowledge of cost characteristics and joint costs is not the end of CPI managers' cost-accounting responsibilities. Other accounting concepts are equally important. Depreciation—recovery of capital equipment sunk costs—is one of these.

For the chemical industry, depreciation is a whopping financial factor; annual capital expenditures are now running at a rate of $1.4 billion.

Government Calls the Tune: The government, to prevent abuses that, in effect, would make it a lender of interest-free money otherwise collectible as taxes, calls the tune on depreciation accounting.

From the corporate viewpoint, on the other hand, company financial officers are always seeking new ways to maximize depreciation charges early so as to spur cash flow and minimize taxes.

The government authorizes computing tax-deductible depreciation charges by these important methods:

(1) Straight-line: applies uniform annual depreciation against the asset over its useful life—for example, 10% of the original costs/year for an asset with a 10-year useful life.

(2) Declining balance: applies a constant annual percentage of the undepreciated value of the asset against it. The rate must not exceed twice that of the straight-line method.

(3) Sum of the digits: applies a fraction of the initial cost as depreciation against the asset. The fraction denominator equals the sum of the digits in the years of depreciable life; the numerator equals the number of years of useful life remaining, including the year accounted. Example: for an asset with a 10-year useful life, the first year's depreciation charge would be 10/55 (10 over 10 plus 9 plus 8 . . . plus 1) times the original cost.

In cases where the national interest is involved, faster-than-usual write offs are permitted companies granted "certificates of necessity"—in effect, a no-interest loan equal in amount to the normally collectible taxes on that portion of the depreciation charge in excess of the normal charge.

Complications: The depreciation problem is complicated because virtually all CPI companies compute depreciation in at least two ways in keeping with approved tax code procedures—one for tax purposes, the other for internal accounting. For tax purposes, depreciation charges are almost invariably maximized. For internal accounting purposes, depreciation charges are figured more realistically—especially if the data is used later for product costing and for figuring return on investment.

What depreciation data should managers use for planning and decision-making? Use data that reflect the actual declining value and utility of the assets involved.

Unfortunately, there's always pressure to recover capital quickly. Hence, the easy way is to assume a relatively short useful life, then to write off assets by the straight-line method, the simplest one.

Managers must also consider that useful life may be tied to other parameters than physical life. Technological life, for example, may be critical in many instances, say, where process technology in a given area is changing rapidly.

Most managers are a little hedgy about applying technological life in figuring depreciation because it requires a forecast of the technological rate of advance for a product or process. But with a little courage, foresight and data, this can be done.

Product market life is an even more subtle refinement on useful life. When a product becomes obsolescent, the equipment to make it may become useless at the same time. If the equipment is so specialized that it ends up in the scrap heap when the product dies, the critical factor for figuring depreciation should be product market life.

Inflation Factors Important: Creeping inflation in

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recent years has steadily diminished the purchasing power of the equipment dollar. Since it's customary to depreciate original costs rather than replacement costs, depreciation charges usually fail to recover enough devaluated dollars to replace equipment.

Fluctuations in money value can and should be taken into account by applying suitable factors. Many series of index numbers available from company accounting or economics departments, when applied to construction and equipment depreciation costs, allow for inflation.

All in Use: All these depreciation fillips are far from theoretical. All are in use now in some of the most cost-conscious CPI firms.

Allied, for example, generally employs a straight-line 10% annual depreciation rate to write off equipment, but has applied the concept of useful life as low as three years in certain cases. In some product categories (e.g., insecticides with an anticipated short market life), the company also increases its depreciation rates.

American Cyanamid conservatively tailors internal depreciation charges to each situation but does not hesitate to apply product market life and equipment technological life concepts if these seem justified.

COLLECTING, REPORTING COSTS

Two main cost-accounting systems—job and process costing—are in use in manufacturing operations.

Basically, the job system gathers costs by specific orders, lots or jobs. The process system collects costs by process or department.

Each lends itself to various applications. Job costing is more appropriate where unit costs are relatively high, clear-cut and needed for operating and financial purposes. Process costing works best where costs of individual units are low, unidentifiable or of less significance than average unit costs.

Although process costing is preferred for most CPI operations, job costing has its place in such applications as custom distillations. It works, too, for central service laboratories that allocate charges to producing units.

Standard Costing Variations: Standard costing is a popular costing variation. It's based on a system that arbitrarily assigns predetermined costs to raw materials, labor, overhead and products. Assignment of costs is made for relatively long periods and is based on historical, present, target or anticipated costs.

Standard costing permits simple bookkeeping; actual

Case Study 2: Three Basic Ways to Figure Joint Costs and Profits

Joint costs and profits can best be figured by one of three methods: (1) the sales realization method, (2) the physical output method, (3) the by-product method.

The first allocates costs by each product's share of total sales; the second distributes charges in proportion to product physical volume; the third ascribes all costs to a single main product and chalks up coproduct values as credits against total costs.

Take the general case of three coproducts A, B and C

	Amount	Unit Sales Price	Total Sales Value
Product A	50 lbs.	$1.00/lb.	$50
By-product B	30 lbs.	$1.50/lb.	$45
By-product C	20 lbs.	$0.25/lb.	$5

Costs and profits by the three joint-costing methods would then be computed as follows:

	Sales Realization Method		Physical Output Method		By-Product Method	
	Cost	Profit	Cost	Profit	Cost	Profit
Product A	$40	$10	$40	$10	$30	$20
By-product B	36	9	24	21	*	*
By-product C	4	1	16	—11	*	*
Total	$80	$20	$80	$20	$30	$20

*Revenue is credited to total costs.

turned out in the same process, with these hypothetical specifications:

When the three joint-costing methods are compared one against the other, some glaring uncertainties are noted.

While the sales realization method lends an air of orderliness to the accounting, it's based on the shaky premise that total costs are somehow related to individual product sales. Because the method assumes the same rate of profit (20%) on all coproducts, profits on all products will drop if the selling price of Product A declines. That's not the case, however, in everyday marketing experience.

If costs are figured by the physical output method, profit performance by product turns out to be chaotic. Product C, the lowest-volume product of the lot, loses more in profit than Product A makes. Product B then becomes the productive segment of the business despite the fact that Product A is the highest producer in volume and revenue. In this particular example, the physical output method lacks a ring of accounting realism.

If coproduct costs are figured mainly against Product A by the by-product method, the process returns $20 profit on $50 worth of Product A sales—a 40% rate of return, an unrealistic rate. Besides, the method fails to show how Products B and C contribute to total costs as liabilities.

Despite their limitations, all three basic joint-costing methods are in use throughout the CPI (see text).

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costs are collected, and differences between actual and standard costs are noted in "variance accounts." These tell at a glance the status of cost performance.

CPI managers exploring standard costing should keep in mind such factors as the stability of costs to be standardized and the effect of unusual operating conditions on the system. If government contracts are involved, conflicts with required government costing methods must also be watched.

Who Uses Standard Methods? Monsanto reportedly uses a multiple-standard cost system in process cost performance evaluation. Actual process costs are simultaneously compared with budget (historical) standard, product control standard (based on process capabilities determined by engineering studies) and cost reduction standards (potential costs based on process improvements).

Nearly all Union Carbide divisions employ variations of standard costing techniques. Chemstrand is another user of the standard cost system. The cost-accounting system in use at Chemstrand's Pensacola plant was devised by the cooperative effort of the plant accountant, company cost supervisor and plant superintendent.

At American Cyanamid, standard or actual cost systems are used, depending on the operating situation. At the firm's Lederle Laboratories Division, as in the drug industry generally, standard costing is commonly used because of the vast number of products, sizes and forms involved.

In the plastics industry, actual and standard costs methods may be mixed. For example, actual costs may be applied in the basic manufacturing operations; standard costing may be used for minor product variations (color, for example).

Direct Costing Popular: Direct costing is another method experiencing a rise in popularity. The purpose of direct costing is to charge products only with direct variable costs incurred in their manufacture. Fixed costs are charged as incurred, without regard to production or sales for a given period.

Direct costing doesn't preclude computation of full costs when circumstances require. It permits easy evaluation of critical costs in highly competitive pricing situations. Other advantages: simplified bookkeeping; ease in evaluating management cost performance. Disadvantages: the temptation to disregard full costs in pricing; "freakish" interim profit computations in seasonal businesses.

Among the well-known CPI companies using direct costs are Abbott Laboratories, Armstrong Cork and Pittsburgh Plate Glass.

Adoption of this newer cost accounting technique has met with varying degrees of success. The principal factor in its successful application appears to be close communication between operating management and accounting staff.

NEW STAR: ELECTRONICS

The brightest new star on the accounting horizon is electronic data-processing. Capable of prodigious feats of memory, as well as speed in sorting, comparing and computing, the new machines permit previously impossible accounting procedures. Although generalization is difficult because each installation is designed for specific uses, some outstanding features can be clearly seen.

Whether purchased or leased, electronic data-processing equipment is a high-cost proposition. It must be used extensively to justify itself economically. The more flexible the equipment for handling both technical and accounting computing, the better the load factor.

Costs of revising an accounting system to meet computer requirements are high. Therefore, when measuring savings in clerical costs vs. computer costs, it's not surprising to find that, in many cases, savings are marginal or even nonexistent.

On the other hand, electronic data-processing's speed, regardless of the size of staff, is a decided advantage. It also permits new breakdowns of accounting data previously too complex or tedious to work out. The value of speed and detail are all too familiar to the manager who has lost out on a business opportunity because cost data was too late or too skimpy.

Computer processing in the CPI has taken various forms. Allied has three computers that are used for research, engineering and accounting purposes. Despite the firm's diverse divisional operations, much centralized accounting has been achieved.

Like Allied, Monsanto maintains a highly centralized cost-accounting sys-

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CW Report

tem, is currently doing much of its work on an IBM 700 Series computer.

American Cyanamid is standardizing its accounting system for computer processing. The first material on the computer: sales statistics, payrolls, inventories, personnel statistics and other operating data. Cyanamid also plans to use the computer part-time for technical work—research problems previously unworkable without a computer.

Union Carbide has an IBM 650 computer at its South Charleston location handling technical problems as well as payroll, inventory, labor, distribution and other accounting functions. Studies show that the new computer will not only speed computations but also show a net saving over current manpower and associated costs.

Using computers, Du Pont has developed a comprehensive system of new-product cost and profitability estimating.

Arthur D. Little's Datatron is being used for a broad spectrum of computing operations, including internal payroll, billing, accounting reports, as well as for computing for clients. Other available time is leased out, a common practice to maximize computer loads.

HELPFUL HINTS

Here are seven ways to spread cost-accounting know-how, promote co-operation between cost accountants and management:

(1) Give your cost-accounting department the personnel, budget and equipment it requires.

(2) Keep accounting posted on cost responsibilities of operating personnel.

(3) Include accounting in your training programs for executives.

(4) Hold scheduled reviews of cost reports between cost-accounting and management personnel.

(5) Show, by use of keys, how costs are derived in all cost reports.

(6) Give the accounting department authority to initiate special studies.

(7) And most important: count your accounting staff among the key players on the company team.

Copies of this CHEMICAL WEEK Report are available at $1 apiece (bulk rates on request) from Chemical Week, 330 West 42nd St., New York 36, N.Y.

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U.S.I. CHEMICAL NEWS

October 17 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1959

Sodium Alcoholates Act as Catalysts for Formation of Graft Polymers by Milling

Government researchers reported recently that graft polymers can be prepared by milling the component resins together on an ordinary roll mill with an anionic catalyst such as a sodium alcoholate. The reactants need not be solubilized, since reaction takes place right on the mill.

So far, styrene has been grafted onto polybutadiene and onto a copolymer of butadiene and acrylonitrile by this process. In a typical preparation, polybutadiene is milled with dispersed sodium until the mixture reaches 60°C. After cooling the rolls to 20°C., styrene is added, then propinol. Cooling stops and polymerization begins.

Temperature control is of the greatest importance to the success of the reaction. Too much heat causes gel formation; too little yields polystyrene. The researchers report that stabilizers need not be removed from the resins since they do not interfere with the grafting process. Resins can therefore be stored until used. No inert atmosphere is necessary.

Information on the preparation of sodium dispersions and their use as polymerization catalysts generally, as well as their use for sodium alcoholate preparation, is contained in U.S.I.'s brochure on Sodium Dispersions. This brochure may be obtained on request.

n-Butyl Alcohol Data Sheet Just Issued by U.S.I.

n-Butyl alcohol — solvent for coatings and resins and intermediate for plasticizers, resins, weed killers, ore flotation agents and many other compounds — is described in a new technical data sheet now available from U.S.I.

Specifications, properties, shipping and application information are included. The advantages of the material as a solvent for nitrocellulose lacquers are highlighted.

The data sheet can be obtained from U.S.I. sales offices or from the Industrial Alcohol and Solvents Sales Department at 99 Park Avenue in New York.

Ether Aerosol Gives Diesels Quick Start

Ethyl ether and a lubricant have been combined in an aerosol formulation designed to permit quick starting of diesel engines in cold weather.

The formulation, recently put on the market in pressurized cans, is said to be low in cost and to perform at temperatures down to minus 60°F. Advantages cited for this priming fuel include: reduced dilution and wear, minimizing of strain on engine parts and batteries, prevention of downtime, elimination of towing and extra labor costs.

New Uses Developing Rapidly For Polyethylene Film in Chemical Plant Construction

Film Makes Ideal Moisture Barrier for Buildings and Roads; Protects Construction Machinery, Equipment and Materials.

The ready availability of low-cost polyethylene film in a wide range of widths, lengths and thicknesses is changing the face of the construction industry. New building practices and techniques are evolving rapidly to take advantage of the excellent moisture barrier characteristics, strength and light weight of the material.

Another great advantage in construction work is the durability of polyethylene film. It has great toughness and elasticity and will take considerable abuse without tearing. It stays flexible under all types of weather conditions.

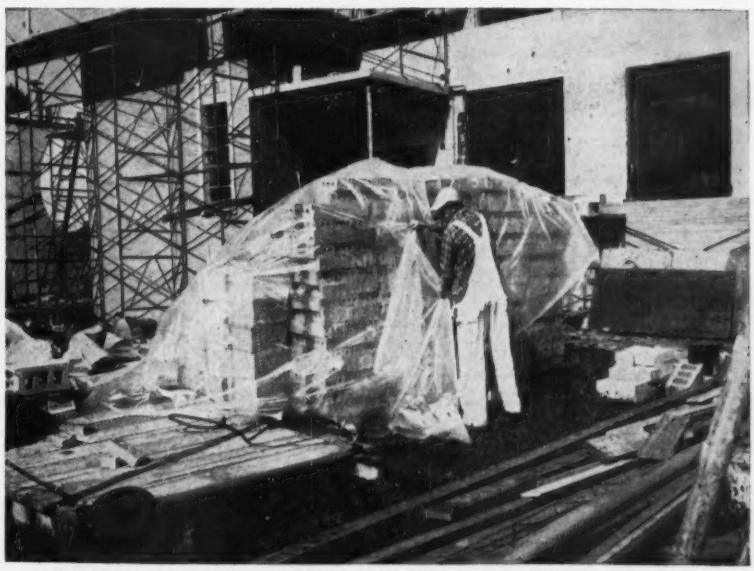
Film Valuable in Concrete Work

Constructors of chemical plants, commercial buildings, homes and other structures are employing polyethylene film for three general types of jobs: in concrete work; as a vapor barrier for interiors; as a protective covering.

As a curing agent for concrete slabs, polyethylene film laid over the watered, hardened concrete retards evaporation and allows the slab to age slowly, giving maximum hardness. The sheet can then be used again, either for the same type of job, or under a foundation slab or concrete road section as a moisture barrier base.

Because of its flexibility, strength and light weight, polyethylene film has proved

MORE



Polyethylene tarpaulin being placed over building materials during plant construction.

New Analysis for Naphthas Uses Gas Chromatography

At the ACS meeting at Atlantic City in September, it was reported that a shortened analysis for olefin-free naphthas has been developed. Gas chromatographic methods, using ethyl chloride as an internal standard, is said to give the content of C_5 and lighter components in these naphthas in one-third the time formerly required by standard low-temperature fractional distillation (LTFD) methods.

The naphtha sample, blended with ethyl chloride, is injected onto Silicone 200 on a column of Celite. The technique involves reversing the flow of the helium carrier gas after *n*-pentane has come off, to backflush the heavier components from the column.

In addition to the time-saving aspects of the new method, it is claimed to give outstanding reproducibility as well as improved accuracy over the LTFD method.

October 17 ★ **U.S.I. CHEMICAL NEWS** ★ 1959

CONTINUED

Polyethylene Film

easy to handle in concrete work, and cuts down on tearing, which has been a problem with many other materials.

New Use in Tilt-Up Construction

In tilt-up slab concrete construction, polyethylene film is being used as a bond-breaking barrier. A layer of film is laid on the surface on which the slab will be poured, to separate it from that surface. After drying, the poured slab can be tilted up from the surface quickly and easily. Its undersurface is smooth, and it has received a strong, even cure because of the moisture barrier characteristics of the film.

In the pouring of foundation walls, polyethylene film is being employed to line the forms for smooth finish and better curing. It is then attached to the walls before backfilling, to act as a moisture barrier for the completed foundation.

Polyethylene film acts as an excellent moisture barrier on side walls and ceilings, in the water-proofing of beams, in the flashing of stone and brick sills, for flashing window and door heads in masonry construction—in short, for all types of moisture-proofing work on buildings.

Film Protects Work and Personnel

Finally, chemical constructors find that polyethylene film gives excellent protection from the weather – for men, structures, equipment, machinery and materials. On unfinished buildings, it keeps out wind and dirt while permitting the sun's light and heat to enter. Work can continue, uninterrupted by cold or storm. And as a tarpaulin, polyethylene film is light and easy to handle – provides the most inexpensive protection available for expensive equipment.

The future of polyethylene in the building industry continues to be brightened by new applications. For example, "bubble houses" held up by air pressure show promise as economical shelters for construction work or temporary storage. New uses such as these promise to further the spectacular growth which has been characteristic of polyethylene in recent years.

Another New UV Absorber Developed for Polyethylene

A metal-organic stabilizer has been developed to protect polyethylene film, sheet and monofilaments against deterioration from ultraviolet action during outdoor exposure. It is claimed that a two- to five-fold increase in the useful life of the finished product can be obtained through incorporation of this stabilizer into the resin.

The compatability of the product with polyethylene and its high thermal stability are said to make it suitable for low-gauge films where, because of the high ratio of surface area to volume, conventional UV absorbers are not too effective.

As little as 0.25% of the product has been found to give effective stabilization. However, 0.5% is generally recommended. At these concentrations, the very slight green color imparted is reported to be negligible, particularly in low-gauge stock. The material is also recommended for use with polyolefins other than polyethylene.

The following typical weathering data is given for conventional polyethylene:

Percent Elongation Versus Hours of Accelerated Weathering*

Stabilizer Concentration, %	Hours of Exposure		
	0	150	250
0.0 (unmilled sample)	545	105	26
0.0 (milled sample)**	388	86	0
0.2 (milled sample)**	400	366	175
0.5 (milled sample)**	262	247	252

*Accelerated weathering conducted in Fade-O-Meter. Five-mil, extruded film used for tests.

**Standard procedure includes 10-minute milling of resin and additive, at or near melt temperature of respective resins, on 2-roll plastics mill, to insure complete dispersion.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

New, all-inorganic zinc coating is designed to give high galvanic protection and to eliminate sub-film rusting in fresh and salt water, solvents. Claimed effective from —80°F to +750°F. Can be used as single coat or as prime coat. **No. 1520**

Handbook on properties of rare earth metals and compounds is now being sold. Brings together for first time current data on physical, crystal, chemical, mechanical, electrical, magnetic, nuclear and thermodynamic properties of the 15 rare earth metals plus yttrium. **No. 1521**

Electron beam welding process has been developed for zirconium, hafnium, tantalum and other reactive metals impossible or very difficult to weld by ordinary means. Uses high intensity beam in high vacuum. **No. 1522**

Fact file on titanium and titanium alloys can now be obtained. Booklet contains sections on high temperature performance, corrosion and erosion resistance, properties, metallurgy, machining, fabrication, welding and testing. **No. 1523**

New use for molecular sieves — to both store and tame a large number of chemical compounds which are extremely volatile, toxic or reactive — is described in a booklet now available on chemical-loaded molecular sieves. **No. 1524**

Phospho and silico molybdic acids are now being produced in experimental quantities. Suggested for use in analyses and in petrochemical and pigment fields, as catalysts, organic precipitants and corrosion inhibitors. **No. 1525**

An atomic industry directory of products, equipment and services can now be purchased. Gives product and service profiles of over 200 industrial organizations active in development and use of atomic energy here and abroad. **No. 1526**

Colorimetric unit for quick-testing of low concentrations of dissolved oxygen in boiler feedwater is now on market. Claimed accurate to within two parts per billion of oxygen. Said to be easy to use by inexperienced operators. **No. 1527**

Tetranitromethane oxidizer for high-energy liquid and solid rocket and missile fuel systems is described in new data sheet. Active oxygen content is close to liquid oxygen while formulation of stable, storable fuels is easier. **No. 1528**

New pH calculator, set up like a slide rule, solves complex problems involving concentration of buffer solutions, rapidly and easily. Eliminates logarithm calcuations with scales that can be read to second decimal place. **No. 1529**

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Pharmaceutical Products: DL-Methionine, N-Acetyl-DL-Methionine, Urethan USP, Intermediates.

Heavy Chemicals: Anhydrous Ammonia, Ammonium Nitrate, Nitric Acid, Nitrogen Fertilizer Solutions, Phosphatic Fertilizer Solution, Sulfuric Acid, Caustic Soda, Chlorine, Metallic Sodium, Sodium Peroxide.

Alcohols: Ethyl (pure and all denatured formulas); Anhydrous and Regular Proprietary Denatured Alcohol Solvents SOLOX®, FILMEX®, ANSOL® M, ANSOL PR.

Animal Feed Products: Antibiotic Feed Supplements, Calcium Pantothenate, Choline Chloride, Special Liquid CURBAY, Menadione (Vitamin K_3), DL-Methionine, MOREA® Premix, Riboflavin Products, U.S.I. Permadry, Vitamin B_{12} Feed Supplements, Vitamin D_3.

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Market Newsletter

CHEMICAL WEEK
October 17, 1959

New gains for plastic pipe marketers in their uphill struggle for general adoption of their products for use in plumbing applications has come through the writing of plastic pipe into Illinois' state plumbing code. This brings to five the number of states putting a stamp of approval on plastic pipe use; the others are Kentucky, Maine, Wisconsin and California (*CW Market Newsletter, July 25*).

Applications for which plastic pipe is approved by Illinois: house or building service connections, drainage, venting, outdoor cold-water piping systems. The new code specifies that pipes, cements and thread lubricants must be approved by the National Sanitation Foundation—thereby recognizing the NSF seal of approval as protection against inferior plastic pipe products (*CW Market Newsletter, July 11*).

•

A new, 10,000-tons/year-capacity alum plant will start up in mid-October at Pomona, Calif. Initial production from the unit—owned by newly organized Associated Chemicals Co.—will be alum solution for use by the paper industry; solid alum will be marketed by the end of '59. The firm reports it has plans for "early production" of other inorganic chemicals.

Entry of the newcomer into alum marketing points up the steadily increasing demand for this chemical. Three other alum plants slated for completion in '60: Allied Chemical's General Chemical Division, at El Segundo, Calif.; Stauffer, at Vernon, Calif.; Dixon, at Newark, N.J. (*CW, Sept. 19, p. 40*).

•

Pakistan will import 150,000 tons of chemical fertilizers—about $15 million worth—in fiscal year 1959-60; this initial quantity may be boosted 100,000 tons, worth an additional $10 million.

Orders already placed: 14,000 tons of ammonium nitrate; 5,000 tons of urea (for use in West and East Pakistan, respectively). Total fertilizer requirement for the new season is about 200,000 tons, but some observers believe closer to 300,000 tons will be consumed.

Pakistan will be able to provide only 50,000 tons of ammonium sulfate from its Pak-American Fertilizer Factory at Daudkhel, but new fertilizer production boosts are coming. Meanwhile, the government has boosted its subsidy to increase use of fertilizer from 40% to 50% for the fiscal year. Both domestic and imported plant foods are covered by the program.

Tentative estimates of Pakistan's fertilizer requirements during the country's second five-year plan (1960-65) indicate demand will increase this way: 240,000 tons in fiscal 1960-61; 340,000 tons in 1961-62; 500,000 tons in 1962-63; 620,000 tons in 1963-64; and 740,000 tons in 1964-65.

The world's northernmost caustic-chlorine plant — located a short jog from the Arctic Circle at Oulu, Finland—is in partial production. The Oulu Osakeyhtio unit utilizes 50,000-ampere Uhde mercury cells furnished by Friedrich Uhde of West Germany.

•

The surprise price cut on polystyrene late last week by Dow Chemical in essence wipes out the increase initiated by that company a few weeks ago (*CW Market Newsletter, Sept. 26*).

The current situation supports the move, since the preceding increase came in the face of significant price slashes on competitive linear polyethylene (*CW Market Newsletter, Sept. 26*).

Dow's cuts range from 2½¢/lb. on three grades of high-impact material to 1¢/lb. on medium-impact and superimpact grades. New typical price: 28½¢/lb. for 475 high impact, in quantities of more than 20,000 lbs.

•

Don't look for quick resumption of coal chemical deliveries that have been interrupted by the steel strike if an 80-day Taft-Hartley "cooling-off" period is invoked.

It's highly unlikely that any substantial volume of naphthalene or benzene—the coal chemicals that are in shortest supply—can be moving back into distribution channels on the way to hard-pressed consumers within less than four weeks. Moreover, inventories of coke are currently at high levels. So even if steel production resumes on a full scale, coke-oven operation may not be brought back to top rates as quickly. This would, of course, delay peak production of coal-tar chemicals.

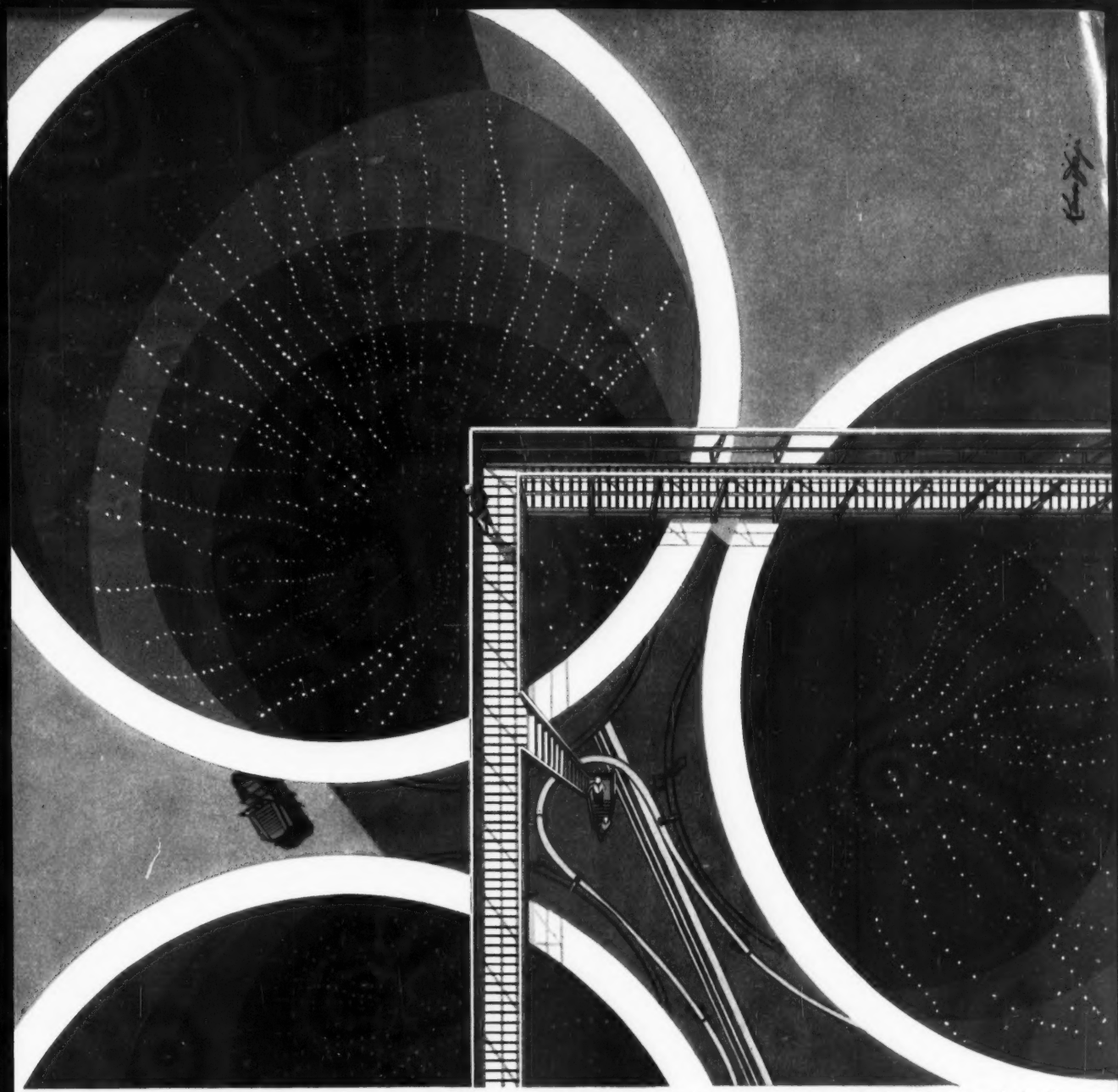
Then, too, if no steel settlement seems imminent after some 60 days of the 80-day period, at least a two-week coke-oven cooling down period would have to begin.

Meanwhile, imports of coal-tar chemicals are being resumed as the result of the T-H injunction against the longshoremen's strike that shut down Atlantic and Gulf shipping. Reports are circulating, for example, that a Russian tanker with a load of benzene is on the way to Houston.

•

More methanol — and methylamines — are hitting the market this week. Commercial Solvents, says Vice President Ward Jackson, has "substantially increased" production of methanol for sale and for conversion by the company into derivatives. Output of mono-, di- and trimethylamines (from methanol) is being stepped up at CSC's Terre Haute, Ind., plant.

There are no official figures on size of the expansions, but process adjustment and some new equipment—rather than an additional plant—are behind the boost in methanol capacity at Sterlington, La. The increase probably nudges CSC's methanol to over 50 million gal./year.



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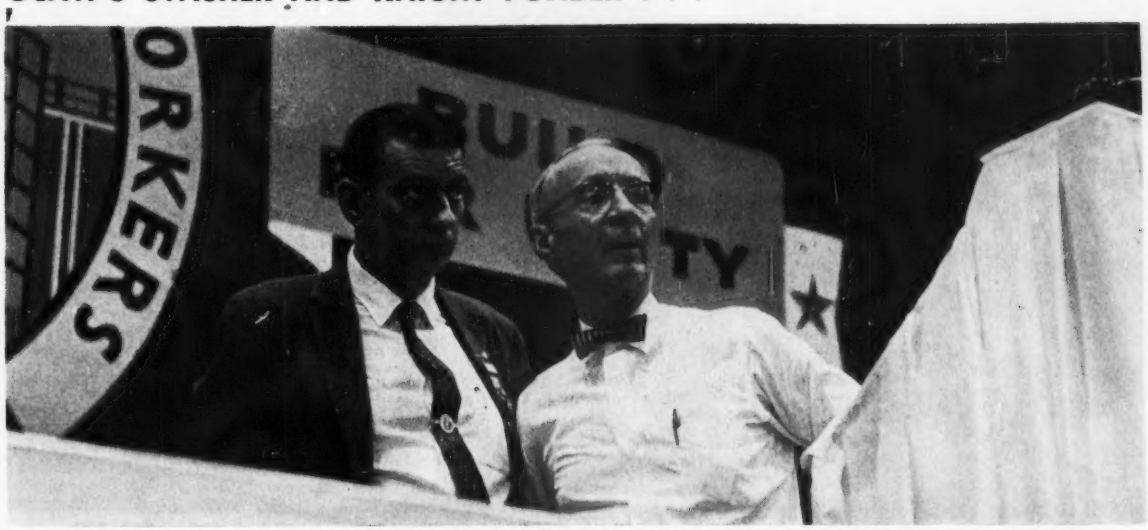
OCAW'S SWISHER AND KNIGHT PONDER . . .



ICWU'S MITCHELL AND MEMBERS PARLEY.

Union Chiefs Seek Strategy for Strength

The two major chemical unions—the Oil, Chemical & Atomic Workers Union and the International Chemical Workers Union—each held annual conventions in Cleveland last week. Both unions acted to intensify organizing activities, and both meetings heard proposals for building union strength in the months ahead.

Simultaneous conventions had been planned when merger proposals were alive in both unions. But merger was subsequently rejected, and the subject was not on the conventions' agendas.

The 450 ICWU delegates and 700 OCAW representatives were told by their leaders that they must mobilize their efforts to counter the militant stand management is taking.

The example of the steel strike (*see also p. 16*) was cited again and again. If steel management is successful in resisting wage demands, it will encourage a tougher stand by chemical process industries management in union bargaining—and during the unions' organizing attempts.

Approaches Differ: Each union has its own ideas on how to improve organizing efficiency. OCAW, the larger union, plans a two-way approach. It will greatly expand its organizing drive, and will streamline collective bargaining techniques.

To streamline techniques, OCAW intends to hold regional collective

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N.	**FLOMAX® 25** (Barium-cadmium organic)	Liquid stabilizer. Excellent heat stability and clarity.
O.	**INVIN* 205** (Barium-cadmium-zinc organic)	Stain-resisting liquid stabilizer with high heat stability.
P.	**INVIN* 210** (Barium-cadmium-zinc organic)	Liquid heat stabilizer with superior stain resistance.
Q[1,2],	**PROVINITE® CLARITE®** (Barium-cadmium organics)	Two-part stabilizers for clears. Provinite is general purpose. Clarite for extrusions, flooring.
R.	**NALZIN® N** (Liquid zinc organic)	New co-stabilizer for barium-cadmium types. Provides sulfide stain resistance; adds heat stability.
S.	**CS-137*** (Barium-sodium organic)	Outstanding stabilizer for transparent organosols and solution coatings. Remarkable light and weather resistance.

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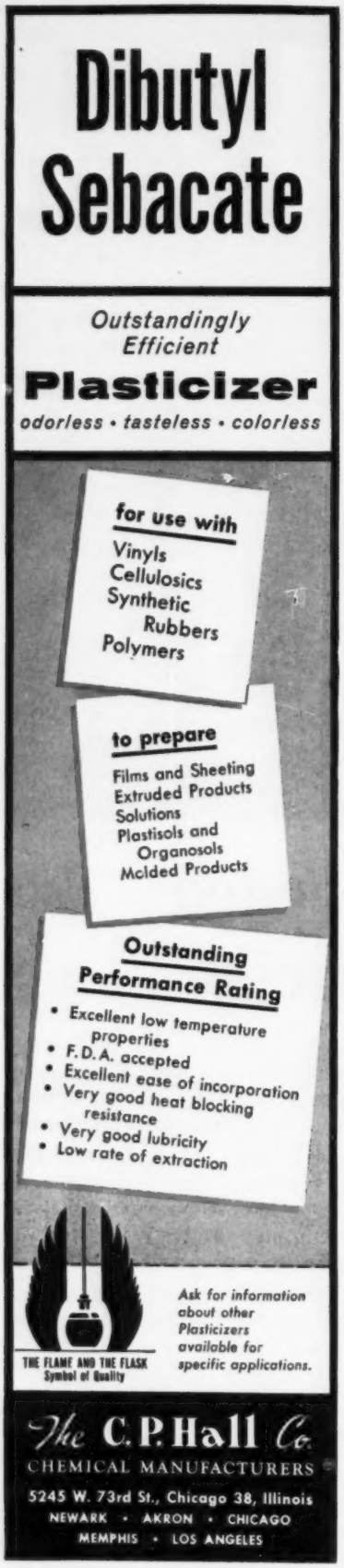


bargaining committee meetings, industry by industry. Each local may send two men to the area conference for its industry. One of the two will work closely with international union headquarters and become a member of the international bargaining committee for that industry.

Effect of this, OCAW thinks, will be to give the international bargaining committee more direct contact with the locals, will also mean that voting members of the committee will come from the industry involved. (Under the current setup, bargaining policy was voted by the executive board of OCAW, which represents a wide spectrum of workers in oil, chemical and atomic energy plants all over the country.)

On the other hand, a proposal to elect district directors—which would have brought OCAW's structure more into line with that of ICWU — was turned down. This action further confirms belief that merger of the two unions is still a long way off.

OCAW also passed a resolution favoring the establishment of amalgamated unions in areas where bargaining strength is divided into too many small locals.

To intensify organizing, the other facet of OCAW's approach, delegates were asked to approve allocation of up to half of both the union's field staff and its general fund to organizing. Moreover, the union has asked the Industrial Union Dept. of the AFL-CIO for a loan of $250,000, to be matched by another from its own locals, for organizing.

Director of the new effort is E. Carl Mattern, 48-year-old long-time OCAW member and immediate past director of OCAW's District 3. In describing the new setup, OCAW President Jack Knight told delegates, "The union has done a better job of mobilizing [management] opposition than it has in mobilizing itself. This will be an effort to rectify that."

ICWU's organizing plans involve going after smaller units and forming them into amalgamated unions. To do this, ICWU will go into areas with many small plants, organize two or three, and then pick an organizer to enlist workers in other plants there. ICWU headquarters will match the salary the locals pay him, and increase it as local income increases. Though the plan is not novel, it shows ICWU's emphasis. ICWU feels the trend in the chemical industry is to spread employment over a greater number of locations.

Other Matters: ICWU delegates voted to increase the monthly per-capita tax that locals must pay to the international from $1.50 to $2. This brings ICWU's monthly assessment up to the level of OCAW's. ICWU President Walter Mitchell stressed the importance of the increase, saying, "The most important issue facing [us] is that of obtaining sufficient finances to provide the techniques for progress . . . It is plain that the present level of income barely permits a continuance of past programs and provides no stability to the organization."

Based on present membership, ICWU officers estimate the 50¢ increase will produce $468,000/year. Some $206,000 of this will be used to increase staff, join organizing programs with local unions, provide legal and legislative assistance, and increase training programs. Some $20,000 will be used for a new health and safety department, and the rest will go into contingency and staff pension funds.

OCAW made a number of important constitutional changes. Among these were 12 necessary to bring the union into compliance with the new Kennedy-Landrum labor law. One union worry: it may be imposing restrictions on financial reporting and operating procedures that will hamper Canadian locals not subject to the law.

OCAW delegates also agreed to a supplementary strike defense fund contribution of $5/member/month. Joining this program is voluntary. But once a local has joined, it must continue to pay the assessments.

Two important constitutional changes approved permit OCAW to drop the "AFL-CIO" designation after its name, and to affiliate (or, apparently, disaffiliate) with any other labor group by majority vote of the union's executive board. This is interpreted as an effort to pressure the parent AFL-CIO to iron out jurisdictional problems between OCAW and the federation's Metal Trades Council (*CW, Oct. 10, p. 82*).

OCAW delegates also voted to schedule conventions biannually instead of yearly. Estimates of savings that would be produced by such

Lubrication News

PROFITABLE IDEAS ON THE LUBRICATION OF CHEMICAL PROCESS EQUIPMENT

Deposit analysis can uncover surprising reasons for failure

When equipment fails, industry's natural tendency is to blame the lubricant. For this reason, samples of oils and greases — often no more than mere specks—sections of failed gears, ruined bearings and other pieces of equipment are analyzed at the Texaco Research Center, Beacon, N. Y. Here they are subjected to a searching analysis by technical service experts using a tremendous catalog of apparatus and procedures.

Lubricant is seldom guilty

Of the numerous samples submitted every year, the lubricant is guilty in less than 1% of the cases. Take a typical example:

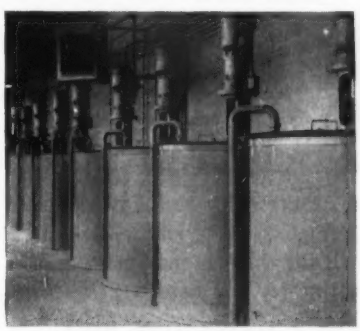
A customer submitted a severely corroded roller bearing. The bearing and its lubricant were liberally contaminated with both red and black material. X-ray diffraction analysis disclosed that the contaminant was an alpha ferric oxide which is characteristic of fretting corrosion—usually correctable only by a design change. Had ordinary rusting occurred the contaminant would have been hydrated ferric oxide —and a finger could have been pointed at the lubricant for allowing water to come in contact with the bearing.

The March 1958 issue of *Lubrication Magazine* contains a fascinating series of these "detective stories." Write for your copy—the supply is limited.

NEW GREASE WITH EP PROPERTIES TAKES 400-700° F. TEMPERATURES

In three years of field testing, a new grease called Thermatex EP 1 has:
— lubricated equipment in which temperatures reached 700° F.
—effectively lubricated equipment handling corrosive chemicals.
— resisted coking and solidifying in steam joints, where temperatures reach 400°. In this application, steam is present, and the grease is pumped through 55 feet of ⅜" tubing.

In these steam joint tests, previous failures of the automatic pumping unit and of the steam joint had resulted when grease solidified and coked in the last foot of the line. These failures occurred as often as every two weeks. During a two-year test with Thermatex EP 1, no failures whatsoever occurred due to lubrication, and no evidence of coking or plugging was recorded. Several joints were operated for more than 9 months with no need for maintenance.



Thermatex has been tested successfully as seal and lubricant for packing-type bearings in mixing machines, similar to these, which handle corrosive alkalis and acids at temperatures to 275° F.

Characteristics and properties

Thermatex EP 1 is a high temperature grease of No. 1 NLGI consistency containing EP additives. It has good heat stability (dropping point: over 500° F.), good shear stability, excellent water resistance, and good wear characteristics. It provides excellent lubrication, and will not separate or harden excessively under pressure.

Information now available shows that Thermatex EP 1 will lubricate satisfactorily at 450-500° F., when relubrication occurs every 3 or 4 days. It will provide adequate lubrication at 550° F., with more frequent lubrication periods. While useful lubricant life at temperatures above 550° F. is measured in hours, use of centralized pressure systems should insure completely adequate lubrication.

For complete information and additional test results, check the coupon.

Guide to Organized Lubrication

Organized lubrication, as a means of controlling costs, is discussed from management's point of view in this important booklet. It describes methods that help raise production, extend parts life, cut downtime.
For free copy, use coupon below.

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- ☐ Send information on Thermatex.
- ☐ Send copy of March, 1958 Lubrication Magazine.
- ☐ Send information on Air Tool Lubricants.
- ☐ Ask a Texaco Lubrication Engineer to call at my plant.

Name _____

Title _____

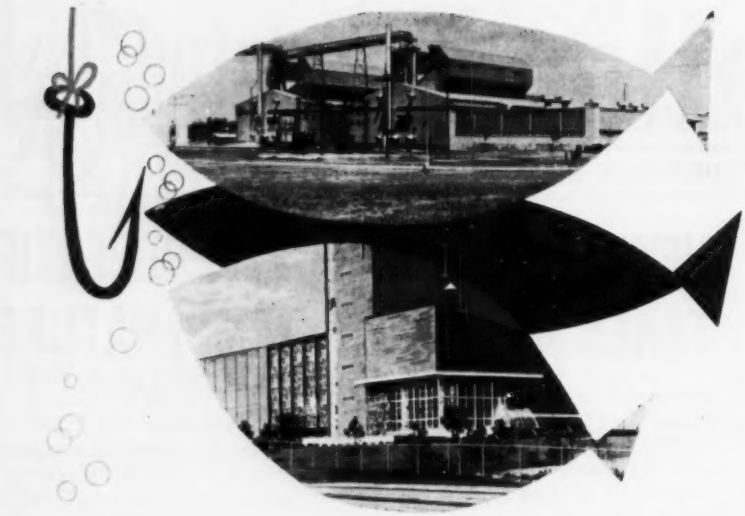
Attachments lengthen life of air-powered equipment

Moisture and insufficient lubrication are major causes of parts wear in air-powered tools and mechanisms. Yet, two simple attachments for the air line, plus one precaution, can eliminate these causes of wear completely.

1) Insufficient lubrication can be overcome with an air line lubricator, which sprays lubricant into the line. The air carries this atomized oil to the tool or mechanism, where it lubricates internal parts thoroughly.

2) Moisture in the air line can be arrested by a water trap, filter or drain, usually attached just before the oil injector. This prevents the moisture from mixing with the lubricant. Otherwise, a thick, emulsified liquid will form that lubricates poorly and may cause rusting.

Water traps should be emptied regularly. If the lubricant in its glass bowl on the injector is white and foamy, immediately drain the trap and replace the lubricant in the bowl with a new supply.



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ATLANTIC COAST LINE RAILROAD

a maneuver ranged between $700.-000 and $800,000—funds that could be applied to organizing campaigns. One disadvantage of yearly conventions, delegates were told, is that the period of time between meetings is too short to fairly assess any new programs.

Really Good Neighbor

The role of good neighbor is simple enough when things are going well, but when calamity strikes the part calls for generosity and statesmanship. That's what Pan American Sulphur Co. is practicing at Jaltipan, Mexico, in trying to rehabilitate a community devastated by an earthquake last August.

Pasco, in addition to physically assisting the 8,000 citizens of the little town where most of its sulfur mining employees live, is asking its 12,500 stockholders to contribute to an earthquake relief fund. Nearly 50% of Jaltipan's citizens were made homeless in an earthquake Aug. 26, which took many lives and left scores injured.

Emergency Aid: Pasco's first effort to help was to send engineers and equipment into the community. The company reports that "while operators of bulldozers, draglines, and trucks cleared debris, emergency shelters were constructed, food kitchens set up, and emergency hospital facilities established."

Next, Pasco pledged itself to help build houses for the employees; both skilled technicians and common laborers live in the town. When they're able, the employees will have the option of purchasing the houses, with mortgage interests paid by Pasco.

Final step in assistance is the stockholders' fund. Pasco President Harry Webb is confident that "shareholders will welcome this opportunity to be of service, which so adequately expresses and manifests the spirit of good-neighborliness." Donations, reportedly accumulating quickly at Pasco's Houston, Tex., headquarters, will be used for reconstruction of the village, beyond the immediate emergency measures taken. Pasco has already put up $240,000 for rebuilding roads.

Pasco's plant and equipment, situated about two miles from Jaltipan, suffered only minor damage. The day after the earthquake, production was

Impact strength for Polyvinyl Chloride ...with easy processing

With a new acrylic resin—ACRYLOID KM-227—processors of rigid polyvinyl chloride can now give their products unusually high impact resistance and enjoy easy processing at the same time. This modifier also provides improved flow in calendering, extruding, and vacuum forming operations.

Overmilling or reworking does not affect impact strength of rigid vinyl modified with this acrylic resin. In addition, rigid vinyl compounds modified with ACRYLOID KM-227 show good retention of impact strength upon exposure to both heat and ultraviolet light.

Processing properties of vinyl compounds may be improved still further by using ACRYLOID KM-227 together with ACRYLOID K-120. Or, for certain properties, you may find a third acrylic modifier, ACRYLOID KM-220, particularly useful. All three are available from Rohm & Haas. Write for technical bulletins fully describing their advantages in the various types of rigid vinyl processing.

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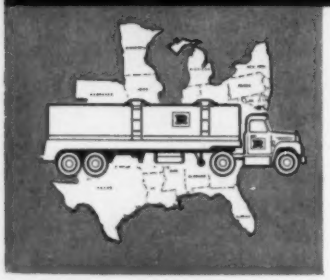

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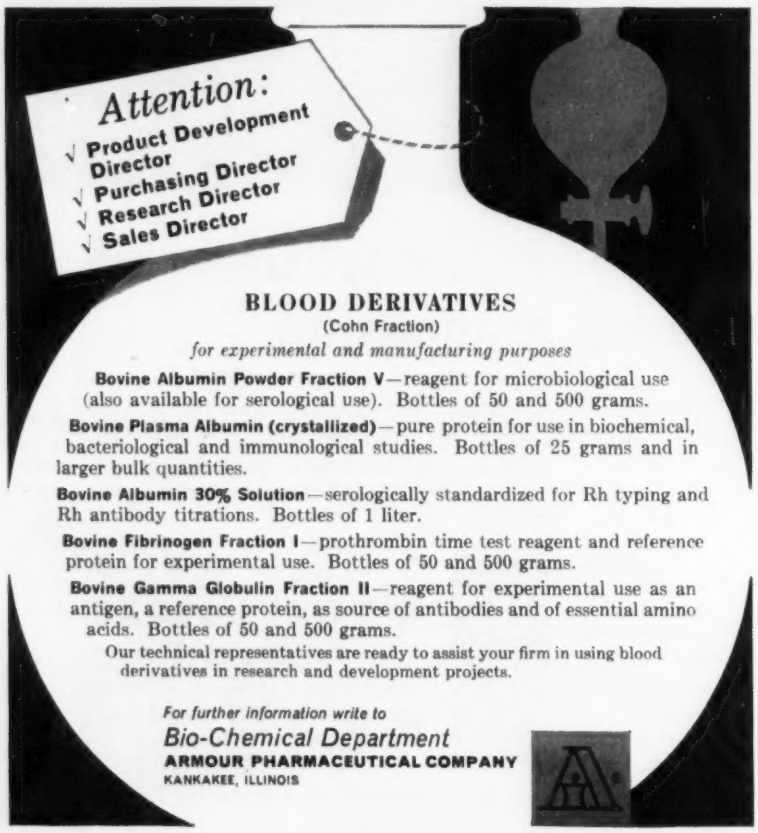

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still under way and ships were being loaded at the company's deep-water facilities at Coatzacoalcos, on the Mexican east coast.

Other sulfur companies in the region were not much affected by the earthquake, as a consequence haven't been faced with wholesale rehabilitation jobs. At the time of the calamity they responded to calls for help with fire-fighting, medical and construction equipment.

Pasco has been extremely active in the Tehuantepec jungle area in promoting "good-neighbor" relations (*CW, June 27, p. 48*). The village of Jaltipan was one of the important communities in the region, was a center for schools, shops and transportation. Pasco points out that aside from Mexican government assistance, there is no other group to help the community and workers.

For Foreign Financing

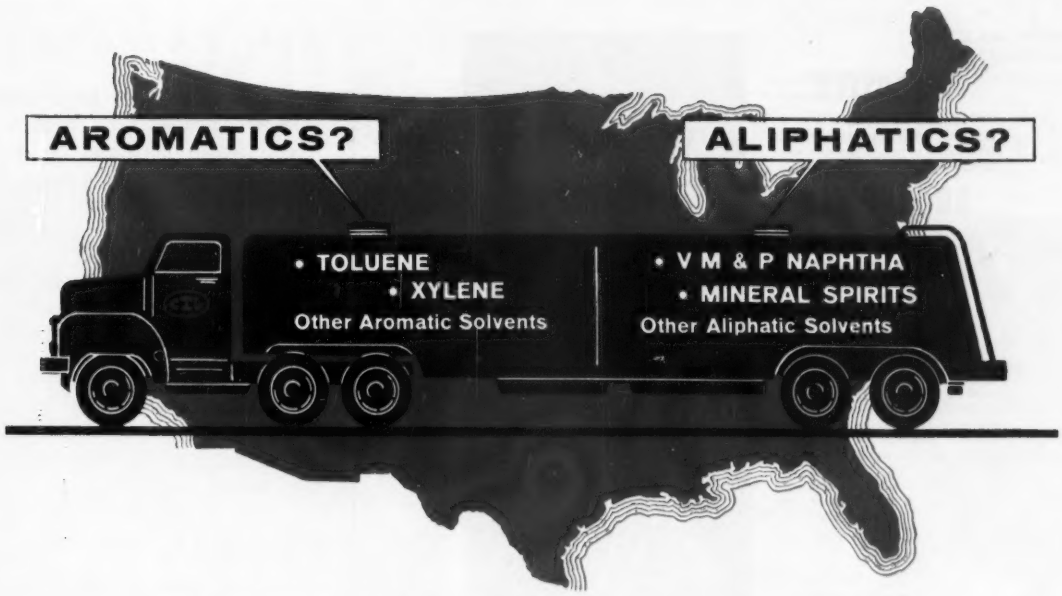
Formation of an International Development Assn. may prove a big help to U.S. chemical producers seeking business abroad, if plans follow their projected course. The 68 member nations of the World Bank and International Monetary Fund, meeting in Washington, D.C., last week, approved establishment of the new lending agency with $1-billion capitalization in "hard" and "soft" currency.

Although U.S. participation is not assured—Congress must still give the "go ahead"—chemical process industries observers are anticipating some international commercial reaction.

IDA's capital, composed of dollars, gold or other redeemable "hard" monies, plus "soft" currencies from underdeveloped countries, will be loaned to boost industrial growth in countries whose credit with the International Bank is not good. In this way, "soft" local currencies can be used for internal investment, "hard" currency for necessary foreign purchases. Just how loans will be made easier—by lowering interest rates or by extending repayment time—has not been determined.

Early View: Although, it's still too early to tell with certainty what the effects will be, U.S. observers hope for these results:

- Growth of chemical business in underdeveloped nations, with signifi-



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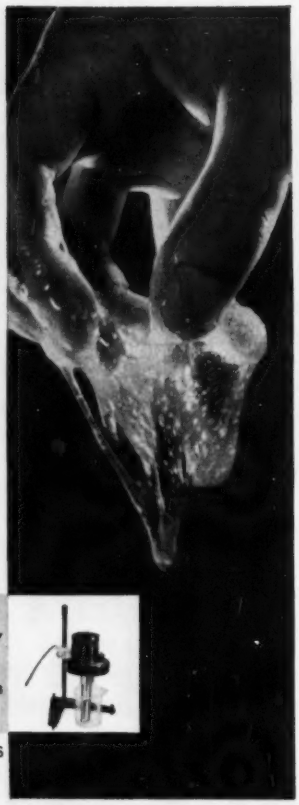

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ADMINISTRATION

cant expansion and a large number of new companies being formed.

- Increased purchases of chemicals and machinery from the U.S.
- Easing of foreign aid, since underdeveloped states will have sound "soft" currency.
- Chances for the U.S. to unload some of the "soft" money collected from sales of surplus agricultural goods and other items.

Washington sources believe this plan—which already has Treasury Dept. and State Dept. backing—will sail through the Senate but may well meet House resistance.

LEGAL

Curb on Toxic Sprays: Florida's Dade County grand jury has requested the state's board of health to control the use of toxic insecticides and horticultural sprays, especially those containing parathion.

The grand jury investigation followed 12 poisonings, half of them fatal, in the area, allegedly caused by the sprays. The jury recommended that the board of health require: (1) permits for use, sale or purchase; (2) sealed packages clearly marked "poison" in red, with safe directions and antidotes; (3) warning signs on properties being sprayed.

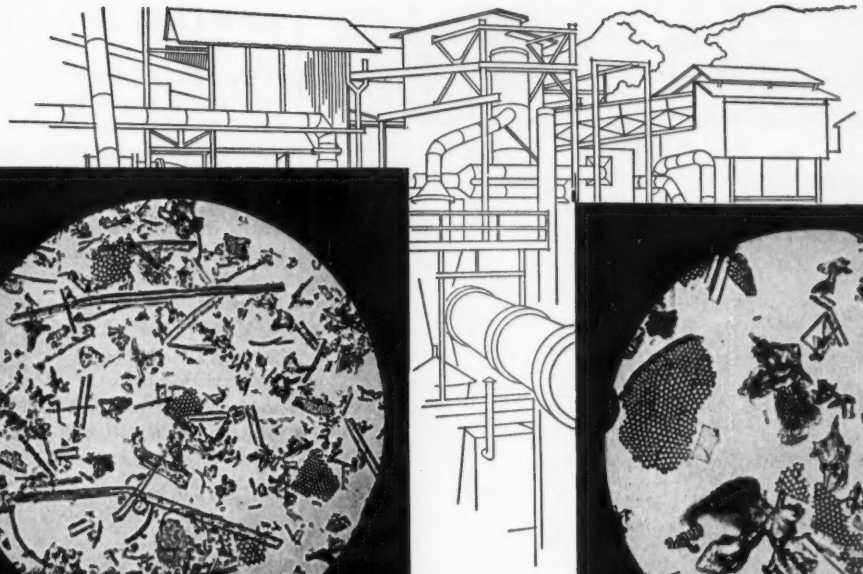
•

Du Pont Trademark Suit: In U.S. district court in Newark, N.J., Du Pont has brought formal charges against Acrolite Products Inc. (Rahway, N.J.), claiming trademark infringement and seeking triple damages. Du Pont claims Acrolite has been infringing its registered trademark for Pro-tek skin cream by selling and promoting Protex-A-Hand and Protect-A-Hand skin creams without Du Pont's consent or license.

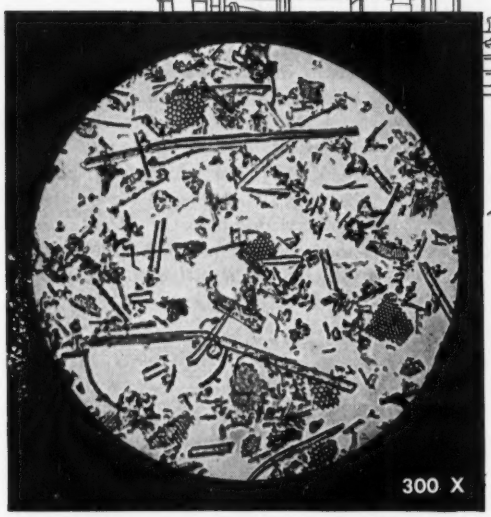
Acrolite denies this, says it has changed its product name at Du Pont's request, and that its package and descriptive copy are not like Du Pont's, can't be confused with it.

•

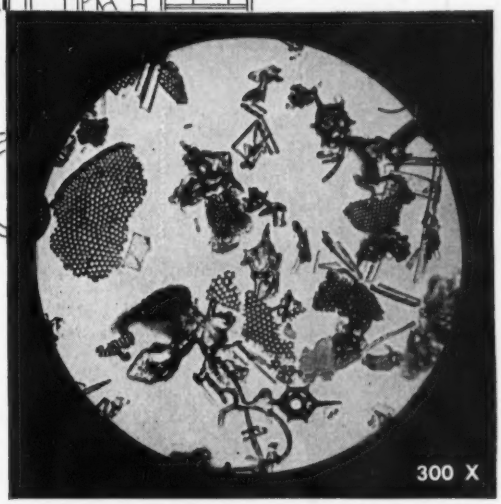
Waste Dumping: Atomic waste disposal hearings that may set patterns for future legislation have been postponed. The Atomic Energy Commission—at request of the Mexican government—shifted public hearings from Oct. 13 to Dec. 17 on an application for a license to dump radioactive wastes in the Gulf of Mexico



Milling and calcining equipment used for all Celite grades.



For high-clarity filtration of most liquids—use this specially milled diatomite, Hyflo Super Cel.



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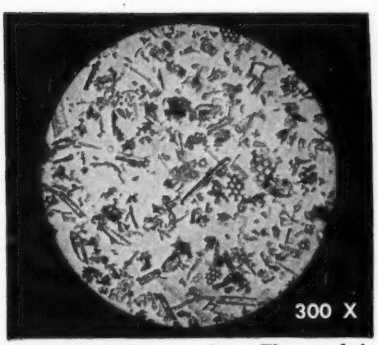
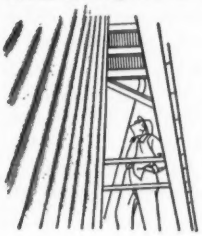


For mineral filler use—Super Floss grade is made up of carefully sized fines air-floated off in the bag house.



Typical J-M bag house equipment.

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Three examples of flux-calcined Celites are shown here. Hyflo® Super Cel is widely used for filtration in many industries. It has just the right combination of coarse and fine particles to assure optimum clarity and flow rates. Celite 545, with a higher percentage of coarse particles, is used to achieve maximum clarity and faster flow rates with liquids that have larger suspended particles.

Super Floss, one of several bag house grades, has fine particle size distribution. A white powder, it is processed within very narrow tolerances (less than 1% retained on 325 mesh). It is a popular filler in fine products such as silver polishes.

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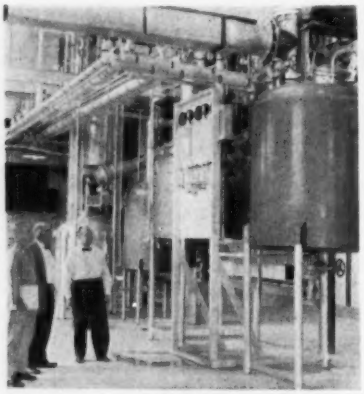

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ADMINISTRATION

(*CW, Sept. 12, p. 89*). Texas, the most recent intervener in the case, filed its objections to granting the license after the deadline date, but, with the postponement, its brief will probably now be accepted. Basis of Texas' intervention: possible contamination of seafood by dumped A-waste.

AEC had granted a license to Industrial Waste Disposal Corp. (Houston), but withdrew it, pending hearings. The company had planned to build its plant at Houston, but now reports it will build it away from the city, to dispel the city's expressed worries.

LABOR

Rubber Hike: Latest in a long line of rubber industry groups settling for 10¢/hour wage increases is Local 135, United Rubber Workers, representing 1,400 production and maintenance employees at Dunlop Tire & Rubber Corp.'s Tonawanda, N.Y., plant. Last June, union and management worked out agreements covering wage standards, seniority, grievance procedure, etc., and recently agreed to the increase under a wage-reopening clause.

•

Humble Contracts: Coming up soon, now that delegates to the Oil, Chemical & Atomic Workers Union convention are returning home (*see p. 99*), will be the first contract proposals between OCAW's Local 4-333 and Humble Oil & Refining's Baytown, Tex., refinery. OCAW recently won jurisdiction as bargaining agent from the long-entrenched independent Baytown Employees Federation. OCAW committees are currently working out proposals for production and maintenance personnel, who have worked without a contract since last December. The union represents 2,700 of the plant's 3,160 eligible production and maintenance workers.

•

Supreme Court Case: On the U.S. Supreme Court docket this year is a labor case testing the constitutionality of compulsory union membership for union members who object to their dues being used to further political objectives with which they disagree. The Georgia supreme court last year, in a case involving employees of a railroad, found the union shop unconstitutional.

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ADMINISTRATION

KEY CHANGES

Irvin W. Hoff to general products director, Warner-Lambert Pharmaceutical Co. (Morris Plains, N.J.).

J. D. Converse to vice-president, Canadian Industries, Ltd. (Montreal).

L. Eugene Daily to administrative vice-president, Norwich Pharmacal Co. (Norwich, N.Y.).

John O. Logan to associate general manager, Chemicals Division, Olin Mathieson Chemical Corp. (New York).

L. T. Murphy to treasurer, Escambia Chemical Corp. (New York).

W. W. Mein, Sr., to board of directors, The Flintkote Co. (New York).

Henry W. Bajak to assistant to the president, Arizona Chemical Co., jointly owned subsidiary, American Cyanamid Co. and International Paper Co. (New York).

Julius P. Ziegler to vice-president and general manager, Amcel Propulsion, affiliate of Celanese Corp. (New York).

Col. Roy W. Muth to commandant Army Chemical Center and Chemical Corps Materiel Command (Edgewood, Md.).

James C. Tourek to vice-president, engineering, Vitro Engineering Co. (New York).

John R. Sargent to senior vice-president, **William M. Newman** to vice-president, sales, Federal Chemical Co. (Louisville).

William E. Wood to president, **Robert E. Briggs** to vice-president, sales, Processes Research, Inc., affiliate of A. M. Kinney, Inc. (Cincinnati).

Oscar H. Johnson to assistant to division manager, Niagara Chemical Division, Food Machinery and Chemical Corp. (Middleport, N.Y.).

KUDOS

To **Homer Hiram Lowry,** consultant (Wilmerding, Pa.), the Percy Nicholls Award, joint honor of American Institute of Mining, Metallurgical and Petroleum Engineers and American Society of Mechanical Engineers.

Tracers

TO THE CHEMICAL PROCESS INDUSTRIES

Published: each Saturday—closes 11 days in advance.

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POSITIONS VACANT

Retired C. E. Wanted, Manufacturer extending production to related lines desires services or technical guidance of Chemical Engineer having substantial experience in adhesives, synthetic resins, industrial chemicals. P-2717, Chemical Week.

Emulsion Polymerization Chemist—excellent opportunity with a progressive chemical company, Metropolitan New York area, for man thoroughly experienced in the formulation and production of homopolymer and copolymer of vinyl acetate and acrylates for use in the paint and adhesive fields. Salary open. Our employees know of this ad. Please write details of experience. P-2783, Chemical Week.

Technical Service: An excellent opportunity for young man to join the Technical Department of the expanding Plastics Division of Spencer Chemical Company. This man should have a strong background in chemical engineering or chemistry, with a minimum of three years' experience in the field of polyolefins. He will conduct studies on extrusion and molding of polyolefins and nylon, and have intimate contact with field technical service work. In reply, please send detailed resume of experience, education and salary requirements to: Personnel Manager, Spencer Chemical Company, 610 Dwight Building, Kansas City 5, Missouri.

Organic Chemist: Spencer Chemical Company is seeking an organic chemist with a Ph.D. degree or its equivalent for its rapidly expanding Plastics Division. This position is in connection with an expanded program for the study of new polyethylene additives to improve slip, anti-block and anti-static properties, ultraviolet stability, and anti-oxidant characteristics. Experience with high polymers desirable but not essential. Please send detailed resume to: Personnel Manager, Spencer Chemical Company, 610 Dwight Building, Kansas City 5, Missouri.

Chemical Market Research—We are looking for a chemist or chemical engineer with several years industrial experience. Should be interested in current and future markets, the business and economic aspects of the chemical industry. Reply which will be held in confidence—to Roger Williams Technical & Economic Services, Inc., Box 426, Princeton, N.J.

Basic Chemical Specialty Manufacturer selling odor and waste control products to industry, municipalities and institutions desires man to head Technical Sales Department. Sanitary Engineering/Sales background helpful but not essential. Excellent opportunity. P-2854, Chemical Week.

Chemical Sales Representative. Expansion by prominent manufacturer of Fine, Industrial and Reagent Chemicals has created a need for three additional Sales Representatives. Positions provide solid opportunity for college graduate to advance in a dynamic industry. Previous sales experience and degree in Chemistry or Chemical Engineering preferred, but not required. Territories available are parts of several midwestern states, Western Pennsylvania and Eastern Ohio, and Metropolitan New York-New Jersey. Basic salary, bonus incentive and strong management development program. Company car provided. Please send confidential résumé with salary history and territory preferred to P-2839, Chemical Week.

SELLING OPPORTUNITY AVAILABLE

Resin Salesman—New York, New England area. Expanding sales effort by growing chemical company offers excellent opportunity for experienced resin salesman to sell line of hard resins and pure phenolics to paint, ink and adhesive trade. Reply in confidence by sending complete resume and salary desired. SW-2653, Chemical Week.

POSITION WANTED

Sales Management position in agricultural chemicals or allied desired by aggressive young married man. Several years successful experience with leading Agricultural chemical manufacturer covering Southwest U.S. Prefer same. PW-2837, Chemical Week.

SELLING OPPORTUNITY WANTED

Exceptional salesman, 34, with established fol-lowing, presently representing a manufacturer of highly specialized industrial chemicals, wishes to represent one additional well-rated manufacturer of chemicals that possess broader industrial use. If exceptional opportunity were presented, would consider devoting full time. Greater Chicago area. Commission basis only. RA-2855, Chemical Week.

MANAGEMENT SERVICES

"In Engineering, It's the People that Count." Engineers and Contractors for the Petroleum and Chemicals Industries. The C.W. Nofsinger Co., 307 East 63rd St., Kansas City 13, Mo.

BUSINESS OPPORTUNITIES

Wants To Buy Chemical Company. Well-rated Chemical firm interested in expansion and diversification wishes to acquire company established in Chemical Manufacturing, Distribution and Packaging of products including industrial and compressed gases. Preferably located Penna., N.J., Del., Md. All replies strictly confidential. BO-2795, Chemical Week.

For Sale—Former feed mill with siding on PRR. Brick and frame approx 2500 sq ft plus covered area 1000 sq ft. Lot for parking across street. Bins could be used for dry powders or liquid storage tanks. 100,000 gal reservoir and gas available in town pop. 500. 14 miles from Wooster. 3 miles from State Route 3. $8,500.00. Sterling, P.O. Box 42, Big Prairie, Ohio.

Wanted: Small chemical company, with estab-lished sales, by manufacturer located Eastern Pennsylvania. BO-2812, Chemical Week.

FOR SALE

$3,000,000 Liquidation-Chemical Plant at Orange, Texas. Type 316 Stainless Steel Tanks, Kettles, Heat Exchangers, Columns, Stills, Crystallizers, Centrifugals, Pumps, Valves, etc. Wonderful Values. Send for list. Perry Equipment Corp., 1415 N. 6th St., Philadelphia 22, Pa.

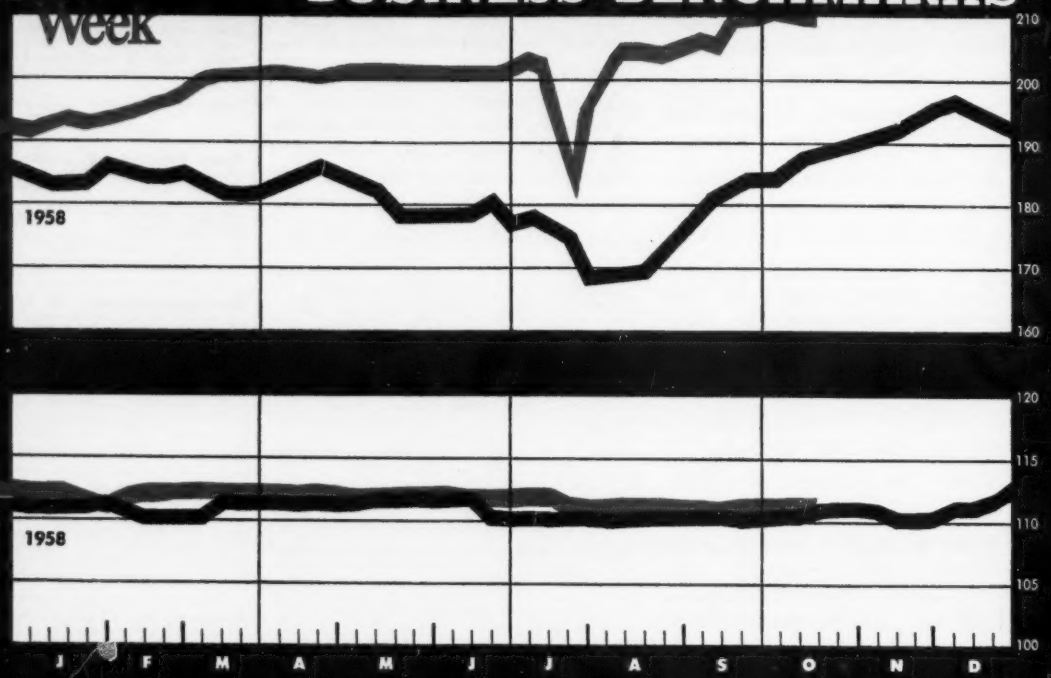
1—Kennedy 7' x 9' continuous ball mill, integral herringbone gear drive, 150 HP. 1948—like new! Perry, 1415 N. 6th St., Phila. 22, Pa.

(2) 96" dia. Vulcan T316 SS Bubble Cap Col-umns, 30 trays, 272 caps per tray. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

MISCELLANEOUS

To Employers Who Advertise for Men: The letters you receive in answer to your advertisements are submitted by each of the applicants with the hope of securing the position offered. When there are many applicants it frequently happens that the only letters acknowledged are those of promising candidates. (Others do not receive the slightest indication that their letters have even been receiver, much less given any consideration.) These men often become discouraged, will not respond to future advertisements and sometimes even question if they are bona fide. We can guarantee that Every Advertisement Printed Is Duly Authorized. Now won't you help keep our readers interested in this advertising by acknowledging every application received, even if you only return the letters of unsuccessful applicants to them marked say, "Position filled, thank you." If you don't care to reveal your identity, mail them in plain envelopes. We suggest this in a spirit of helpful co-operation between employers and the men replying to Positions Vacant advertisements. Classified Advertising Division, McGraw-Hill Publishing Company. "Put Yourself in the Place of the Other Fellow."

BUSINESS BENCHMARKS

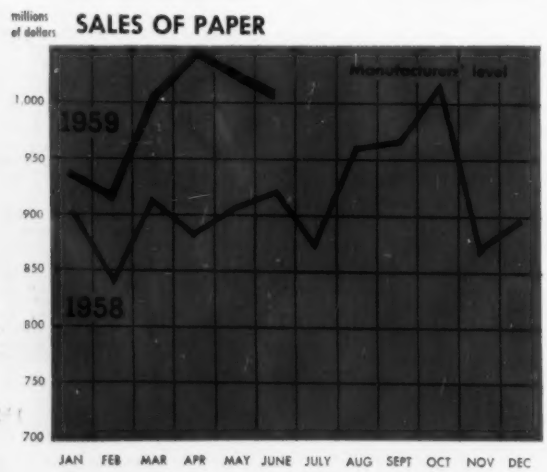


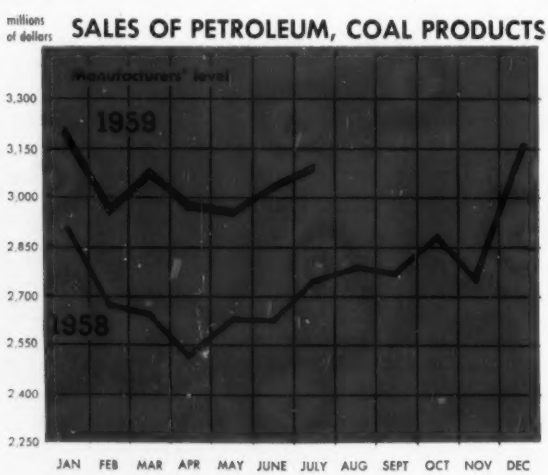
OCTOBER 17, 1959

WEEKLY BUSINESS INDICATORS	*Latest Week*	*Preceding Week*	*Year Ago*
Chemical Week output index (1947-1949=100)	211.5	211.8	189.8
Chemical Week wholesale price index (1947=100)	110.9	110.9	110.9
Stock price index (12 firms, Standard & Poor's)	58.12	57.04	45.56
Steel ingot output (thousand tons)	365	362	1,933
Electric power (million kilowatt-hours)	13,234	12,878	12,111
Crude oil and condensate (daily av., thousand bbls.)	6,825	6,858	7,014

WHOLESALE PRICE INDICATORS (1947-49=100)	*Latest Month*	*Preceding Month*	*Year Ago*
All commodities (other than farm and foods)	128.4	128.4	126.1
Chemicals and allied products	109.7	109.9	110.0
Industrial chemicals	123.7	123.9	122.8
Paint and paint materials	120.3	120.2	119.1
Drugs, pharmaceuticals and cosmetics	93.4	93.5	94.4
Fats and oils (inedible)	53.8	55.3	62.5
Fertilizer and materials	104.8	107.4	104.4

CHEMICAL CUSTOMERS CLOSE-UP





General Chemical announces

NEW LIQUID ALUM FACILITIES

Construction will soon be underway for General Chemical's newest liquid aluminum sulfate producing plant. This time it's El Segundo (Los Angeles), California.

Being built to help meet the growing alum requirements of paper mills, water and sewage plants, and other consumers in Southern California, the plant will augment General's existing West Coast alum facilities at San Francisco, and at Tacoma, Vancouver and Kennewick, Washington.

For sixty years, General Chemical has been a leader in alum research and in continued expansion of facilities to serve industry's needs. In 1911, the company pioneered production of dry alum on the West Coast at its Bay Point Works near San Francisco. Over a decade ago, General also pioneered production and shipping of liquid alum.

YOUR MOST DEPENDABLE SOURCE OF SUPPLY!

With the completion of the El Segundo plant, General Chemical will have 29 works producing dry or liquid alum in the United States and Canada (see list below).

Each of these plants is strategically located to meet regional requirements, offering customers the utmost in convenience and prompt service. Each plant backs up the others, assuring dependable supply at all times. In addition, our chain of warehouses across the country makes stocks of dry aluminum sulfate readily available in every major center of commerce.

Write or phone today for information on how we can serve your alum needs.

Check these 29 General Chemical alum plant locations:

Atlanta, Ga.
Barnet, B. C.*
Chillicothe, O.
Cleveland, O.
Denver, Colo.
Detroit, Mich.
E. St. Louis, Ill.
Hopewell, Va.
Jacksonville, Fla.
Johnsonburg, Pa.
Kalamazoo, Mich.
Kennewick, Wash.
Macon, Ga.
Marcus Hook, Pa.
Menasha, Wis.
Middletown, O.
Monroe, La.
New Orleans, La.
Pine Bluff, Ark.
Port Arthur, Ont.*
Port St. Joe, Fla.
San Francisco (Port Chicago), Calif.
Savannah, Ga.
Tacoma, Wash.
Thorold, Ontario*
Valleyfield, Quebec*
Vancouver, Wash.
Wisconsin Rapids, Wis.
. . . and soon El Segundo, Calif.

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Put a Teflon® sleeve in the body **insert a plug**

add a diaphragm, **a gasket** **and a thrust**

collar, secure the cap and the **self-aligning adjuster,**

and you've got a non-lubricated, trouble-free plug valve.

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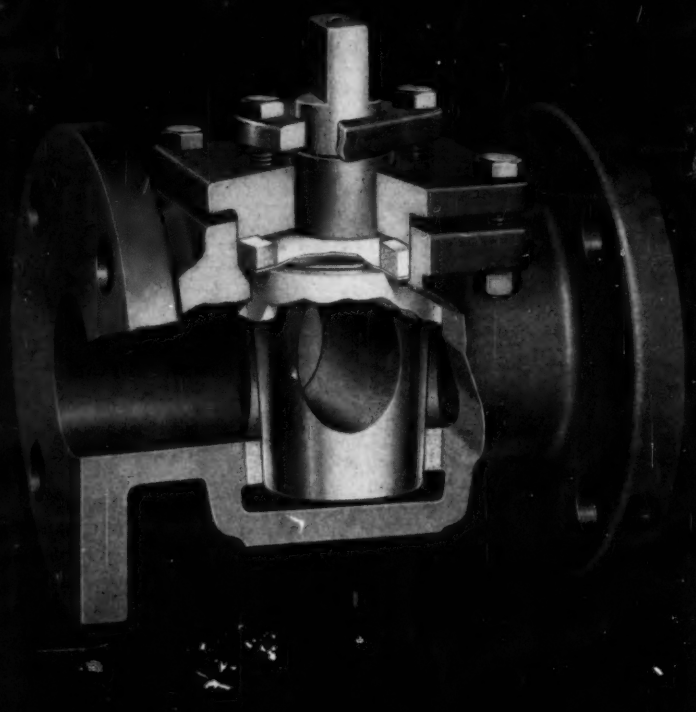

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1/2" to 2" sizes

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